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Educational News and Editorial Comment

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CO-OPERATIVE STUDY OF TRAINING AND EXPERIENCE IN THE ARMED SERVICES

AFTER the first World War, veterans returned to schools and colleges in large numbers. Since too generally no plans had been made for appraising their experience, the granting of blanket credit—a half-year or a semester or more—was resorted to as a makeshift. That some servicemen “shopped around” was certainly to be expected. With the development of the vast educational programs which took place in the services as World War II unfolded, it became clear that blanket credit would be even more unsatisfactory than it was a quarter-century ago, for the specific training programs of the services as well as the “off-duty” educational programs are many fold those of World War I.

The idea has been developed by the educational statesmen in, and associated with, the United States Armed Forces Institute that educational

placement after this war should be based on demonstrated competence rather than on time spent or on a particular amount of blanket credit. Thus both the regional accrediting agencies and such national organizations as the American Council on Education and the National Association of Secondary-School Principals have issued co-operatively pronouncements relative to sound educational credit at both secondary and higher levels. Quite rightly, the services have refused to recommend credit, as the military cannot be in a position where it might be accused of dictating the amount of credit to be allowed by civilian institutions. After a slow start, substantial progress is now being made by a group of staff workers and consultants gathered together by the American Council on Education. Nineteen educational agencies have given financial support to the Co-operative Study of Training and Experience in the Armed Services. The study is being carried on by George P. Tuttle, on leave as registrar at the

University of Illinois, and Thomas Hastings, on leave from his position in the same institution as technical director of the High School Testing Service. The study is under the direction of the Executive Committee of the American Council's Committee on Accreditation composed of George F. Zook, president, American Council on Education; Paul E. Elicker, executive secretary, National Association of Secondary-School Principals; Theodore Jack, president, Randolph-Macon Woman's College, Lynchburg, Virginia; Donald Prentice, president, Rose Polytechnic Institute, Terre Haute, Indiana; A. J. Brumbaugh, vice-president, American Council on Education.

Briefly the committee is causing to be prepared a handbook, *A Guide to the Evaluation of Educative Experiences in the Armed Forces*, which will contain suggestions relative to sound educational credit at both the secondary and the higher levels for a variety of courses. Among the recommendations to be implemented are the suggestions of the National Association of Secondary-School Principals put forth in the leaflet, *Earning Secondary-School Credit in the Armed Forces*, published in the spring of 1944 and distributed to all the twenty-eight thousand high schools in the United States. To supplement the recommendation—

That the subject or field test results obtainable through the U. S. Armed Forces Institute for all educational work in areas of A (1-2) be accepted as a measure of the com-

petence of the student in the subject or course. The amount of school credit assigned should be comparable to the amount of credit the school would grant for the successful completion of the same, or equivalent, subject or subjects taken in the school. The time, which the student in service has spent in attaining such competence, should not be a determining factor in the allotment of the amount of credit granted—

the handbook describes the services offered by the Marine Corps Institute, the Coast Guard Institute, the Armed Forces Institute, and the Navy off-duty program, describes certain courses, and suggests the appropriate credit for each one. Wherever examinations prepared by the Armed Forces Institute exist, they are recommended as the basis for determining competence.

The handbook also describes the General Educational Development Test and suggests how it may be used. This test, as our readers know, will enable young persons of real ability whose educational career was interrupted by the war or for other reasons to enter the educational system at that point at which they can profit best. For example, some young men who dropped out of school at the tenth-grade level may demonstrate that they have the general educational development of high-school graduates and are ready to enter college. The test was devised by Professor E. F. Lindquist, of the State University of Iowa, for the Armed Forces Institute Examinations Staff under the general direction of Professor Ralph W. Tyler, of the University of Chi-

cago. It has been standardized on the graduates of nine hundred high schools. The application of this instrument, described in the handbook, will make it possible to give able young persons who have no other evidence their "educational birthright" of being enabled to resume their scholastic or collegiate careers at the point of demonstrated competence. This discussion will supplement the general recommendation made by the National Association of Secondary-School Principals:

That men and women who were in the early years of their secondary-school careers when they left the school and who have had an extended post-school experience in civilian or military life may qualify for secondary-school graduation on an acceptable rating of general competence through the General Educational Development Test, provided statutory requirements of the state are met.

Valuable as these discussions and illustrations are, they comprise only a small part of the handbook. In the various services there are training courses needed for technical reasons for which no examinations exist but which are of undoubted educational value either at the secondary or at the higher level, or both. Exactly how many specialist training courses there are, no one knows at the moment, but it has been estimated that there are more than a thousand. Herewith is reproduced a description of the training provided an airplane electrical specialist by the training program sponsored by the Army Air Forces, together with the credit suggested.

**COURSE: AIRPLANE ELECTRICAL SPECIALIST
(ENLISTED MEN)**

SERVICE: ARMY (ARMY AIR FORCES)

1. LOCATION: Chanute Field, Rantoul, Illinois

2. LENGTH: Fifty-two six-hour days

Source of students.—Airplane and Engine Mechanics immediately after graduation from an airplane and engine mechanics course; Airplane and Engine Mechanics especially selected by unit commanders. For certain assigned personnel only parts of the full course are required, varying from sixteen to eighteen days. The student's record should state this.

3. OBJECTIVES: To train selected enlisted men to perform minor maintenance of ordinary repairs on aircraft electrical systems.

4. PLAN OF INSTRUCTION: Thirty-six hours or approximately 11 per cent of the total 312 hours are devoted to Maintenance Fundamentals. The remainder of the time is distributed rather evenly among the four specialized phases (see DESCRIPTION OF SUBJECTS).

5. DESCRIPTION OF SUBJECTS: *Maintenance Fundamentals:* Instruction in basic principles of electricity; study of wiring principles; wiring equipment; study of aircraft storage batteries, battery maintenance procedures.

Generators, Regulators, and Relays: Study of wiring, constructional features, and operative principles of aircraft generators, generator regulators, generator relays, and parallel generator systems; instruction and exercises in the performance of wiring; adjustments, inspection, and maintenance operations; diagnosing and correcting malfunctions.

Starters, Motors, Lighting and Warning Systems: Study of wiring, constructional features, and operative principles of starters, reversible motors, retracting systems, warning systems, solenoids, relays, lighting systems, heating systems, lighting and warning systems; performance of inspection and

maintenance operations; wiring operations; diagnosing and correcting malfunctions.

Electronic Supercharger Controls: Study of alternating current fundamentals; study of wiring, constructional features, and operative principles of electronic regulators, A-C motors, inverters; performance of inspection and maintenance operations.

Magnetos and Ignition Systems: Study of wiring, constructional features, and operative principles of aircraft magnetos, ignition switches, and spark plugs; performance of inspecting and maintenance operations and wiring operations on engine electrical systems, airplane wiring systems, auxiliary power systems; diagnosing and correcting malfunctions.

6. RECOMMENDATIONS:

To Higher Institutions.—It is recommended that four semester hours be given in electrical laboratory work. It is recommended that institutions which allow shop credit in their industrial-education curriculum should grant eight semester hours in shop practice. It is recommended that a junior college which offers terminal courses should grant six semester hours (terminal) credit in applied electricity.

To Secondary Schools.—It is recommended that $1\frac{1}{2}$ units of credit be granted in applied electricity or airplane electricity.

This summary (and there will be a thousand others) implements the recommendation:

That, for vocational training courses in subjects for which there are no Armed Forces Institute examinations, a maximum amount of four credits (two units) be given for the successful completion of an acceptable specialist training course of twelve weeks. Acceptable specialist training courses should represent educational experiences for which there are counterparts in civilian life or in secondary schools. Such credit may be designated in a general subject area such as trade or vocational education, mechanical or in-

dustrial arts, or general shop, or may be indicated by a title that is descriptive of the type of educational experience represented, e.g., Airplane Armorer. A proportional amount of school credit should be given for a specialist training course that differs in length from the twelve-week course.

To date very few specialist courses have been analyzed for which no high-school credit can be recommended, but there is a small number.

Here is a boon for the busy secondary-school administrator. Carefully prepared descriptions by competent staff workers, reviewed by consultants, will be available for a large number of courses.

The consultants to the Co-operative Study of Training and Experience in the Armed Services are:

Frederic L. Bishop, professor of physics, University of Pittsburgh

Huber O. Croft, head of the Department of Mechanical Engineering, State University of Iowa

Olin J. Ferguson, dean of the College of Engineering, University of Nebraska

Byron S. Hollinshead, principal, Scranton-Keystone Junior College, Scranton, Pennsylvania

Paul B. Jacobson, superintendent of schools, Davenport, Iowa

James L. McCaskill, director of the Meridian Junior College, Meridian, Mississippi

Alfred P. Poorman, head of the Department of Applied Mechanics, Purdue University

William F. Rasche, director, Milwaukee Vocational School

Homer J. Smith, professor and head of the Department of Industrial Education, University of Minnesota

Henry I. Willett, division superintendent, Norfolk County (Virginia) Public Schools

As this is written (August 1), the first section of the handbook goes to press. It is to be published in loose-leaf form so that the additional material can be inserted as it becomes available. The handbook will sell for two dollars and may be secured from the American Council on Education, Co-operative Study of Training and Experience in the Armed Services, 363 Administration Building, Urbana, Illinois. Colleges have already been solicited by mail, and high schools will be solicited early in September.

In cities where there is more than one high school, the handbook offers a guide to standard practice. In communities which have only one high school, the handbook offers a guide to sound educational credit and assures some uniformity among schools. It also offers the harassed local administrator protection against pressure groups seeking unfair advantage for a local veteran to whom they believe special consideration is due. It eliminates blanket credit and facilitates educational placement on the basis of demonstrated competence. We prophesy that the handbook will enjoy a wide sale among the secondary schools of the United States.

IMPROVEMENTS IN SCHOOLS SUGGESTED BY TRAINING PROGRAMS OF THE ARMED FORCES

WRITING in the *University of Michigan School of Education Bulletin*, Professor Raleigh Schorling lists ten improvements in secondary-

school practices which should come about. Quite properly, Professor Schorling indicates that the cost of such civilian educational procedures after the war might well be three or four times present expenditures, saying in part:

A large training school is likely to have an amazing number of staff members who devote full time to preparation of materials, testing, and training of instructors, lesson-planning, supervision, and visual aids.

This, of course, costs money. Editorially, we note that schools have never seen the need of "staff work"—work done by technical experts who are attached to an administrative officer but who have no responsibility except *to plan, to think, to advise the administrator, and to prepare materials for him*—and, editorially, we recommend to schools a thoughtful consideration of the need for adequate staff assistance as an additional (eleventh) educational improvement which schools may hope for and should strive to achieve.

Military establishments and industry recognize the value of staff work and support it generously. Should we do less in education?

Because of the pertinence of Professor Schorling's suggestions, we quote in part and comment in passing:

1. *A year of social service for all youth.*—

The drive to require military training in secondary schools is under way. If school people believe that a year's social service for youth should include not only the desirable values of military training, but also work experiences, health education, experience with

agencies that serve youth, and a sound program of civic and social education, if they believe that the program should be designed and guided by a commission with a broader point of view than the merely military, they should take vigorous action now. It is probably later than we think!

Certainly nothing will be announced until after the election, but there is every reason to believe that planning for military service to provide garrison troops and to allow veterans to return home is rapidly maturing. There is also reason to believe that the services are in agreement, that certain sections of Congress are receptive, and that some educational leaders are being consulted freely in the planning. If our security, for example, demands a military and naval force of two and a half million men, of whom one and a half million are volunteers, the other million must be secured by selective service among eighteen-year-olds. These demands would require all those physically able for at least a year. Such planning is of vital interest to those who work in secondary schools, for it affects the program to be offered, the orientation to be furnished, and the guidance which is pertinent.

2. *The need for secondary schools to insure a minimum competency to all who can possibly achieve it.*—The training program is demonstrating the crucial importance of a level of competency which is a wide step higher than mere functional literacy with respect to communication and computation. . . .

An understanding and appreciation of this culture, one of the admittedly valid aims

of education, are contingent upon possession of certain simple but basic concepts and principles from the areas of mathematics, biology, physics, chemistry, geology, and other sciences. These concepts and principles are the tools without which man cannot think intelligently about machines, housing, business, transportation, communication, public and personal health, investments, insurance, or scientific inquiry. Without this equipment, a boy is in a mental concentration camp of cruel limitations in which the satisfactions that he can attain for himself and the good he can do for his fellow-men are pitifully small. . . . If the secondary school is to bring all who can be brought to this minimum level of competency, it faces an enormously difficult task. The road ahead for many students seems to lead across the field of a practical physical science.

3. *The expansion of technical education.*—The secondary school has had too many dissatisfied customers who in depression days accumulated in unemployed youth, and in C.C.C. camps. The military training program has taken these boys and taught them a simple technical science and the related mathematics. At the moment, several hundred thousand boys are literally helping to save our institutions by the technical science that they have learned since leaving school. For a generation, at least, such training should be regarded with respect by a grateful world. This training program came largely from industry. It isn't likely that we will throw away our micrometers, verniers, and gauge blocks, the moment the war ends. A program correlating and emphasizing industrial arts, science, and mathematics is a sounder approach to the general education of a large unadjusted group within our schools that is never going to be satisfied with a purely academic program. We should provide this more realistic curriculum for the large number of persons who will continue to be absorbed by industry, trade, farm, and business fairly early in life. . . .

4. *Reaching a greater number of the unad-*

justed.—There are reasons for believing that the training program is more successful in dealing with this type of youngster. The emphasis on practical science has been mentioned. A second reason is that so many of the courses are organized in terms of ability to do. . . . A third reason is that the military spends more money on the study of the human material and the guidance of individual students. . . .

We got off on the wrong foot when so many schools classified and sectioned children by scores on intelligence tests alone. We make an even greater mistake when we provide so little that meets the needs of these students that they are forced into traditional courses. This, in turn, results in a constant gearing-down of courses by including popular material in a futile effort to meet the needs of students who should not have elected the course in the first place. We need to differentiate on the basis of needs without stigmatizing, by providing different courses with wholly different purposes and experiences for very different kinds of students. The great variety of choice of short specific courses in the training program is something we should look at twice before we reject it. . . .

5. *Making the traditional courses more rigorous.*—The requirements of technology are far greater than has been generally assumed. Leadership in many fields presupposes an expertness and range of scholarship that schools have traditionally not made available. A fraction of the schools' student body—unfortunately no one knows how large—will need a broader and deeper foundation than educators have realized. The field of mathematics provides a good illustration. The mathematical demands in training schools for radar, radio, fire control, navigation, air photography, map-making, orientation, and a goodly number of other areas far exceeded what could reasonably be expected of graduates of our four-year sequence. There has been no criticism or complaint because of this particular shortage. But the fact is

that these fields took all the mathematics a good student could bring "and then some."

6. *A better job of planning.*— . . . It is gratifying to find in school after school an officer with the title "In charge of Lesson Plans." The right kind of planning gets results. Consider for example a new course designed by the General Motors Institute of Technology. A year ago this course did not exist. Today it is a respectable mimeographed textbook, including not only subject matter, but a guide sheet for the student and one for the instructor, for every hour of instruction. It is perhaps needless to say that this book of plans was built co-operatively on company time by a group of well-paid experts. There are undoubtedly courses widely taught in Michigan schools for fifty years that are not as well organized as this course which is only a year old. It is safe to say that the typical instructor of the schools of the armed forces spends much more time in planning his work than is done in regular schools. In far too many schools, teachers and books change every year without a respectable course of study, without supervision, and with no provision for the right kind of planning.

7. *New emphases and innovations.*—We will in all probability give more careful attention to mental health and a physical-fitness program. The results of administering tests of physical health are known by all and are deeply disquieting. There is good reason to believe that our record of mental fitness is no better. More than a million men have to date been honorably discharged, of which only about fifteen thousand were wounded. . . .

Perhaps the most impressive trend is the wide use of service departments for visual and auditory aids. This aspect of the training program has grown by leaps and bounds. . . .

It is likely also that we will provide some new courses, or at any rate new units, in the social studies on the cultures of peoples. The

popularity of these new courses in the U.S.A.F.I. offering, and the concept of a shrinking world in which boys will be coming home from many lands, suggest that school men may well look to this new unit as a fruitful way of enriching the offering of the high school.

8. *Making instructional materials more nearly self-teaching.*— . . . The mimeographed materials used show that in many cases the persons responsible for them have tried to keep in mind the person who is to study these materials, what he knows, and how he learns. A goodly fraction of the teaching materials employed by U.S.A.F.I. are labeled "self-teaching." Rush orders for textbooks in certain fields make it impossible to provide self-teaching manuals. The Navy's strenuous effort to provide self-teaching materials for the enlisted man is significant. In general, textbooks in schools are far superior to the technical manuals of the Army and Navy, but the effort to design self-teaching materials may have a worth-while suggestion for commercial publications after the war. . . .

9. *A modified program of teacher education.*—The war has revealed that the standard program for the education of teachers is inadequate. Teachers lack familiarity with a vast range of materials, aviation, industry, trade, business, statistics, and sciences in general. It will be difficult for them to teach, not to mention creating the wider diversity of courses that the new era demands. . . .

10. *A larger responsibility of the student for his own education.*—Learning something pays in the armed forces. It is the road to higher rating, more compensation, and special privileges. In the service, men may be unhappy when they fail to master some specific unit. Already, there is evidence of a respect for learning in the rapidly rising registrations in the courses offered by U.S.A.F.I. and in the courses to be taken by classes provided by the Navy for the enlisted man. In the latter case, the registrations are at present increasing at the rate of about a thousand a month.

One may not agree entirely with Professor Schorling's suggested improvements, yet find them challenging and thought-provoking. For example, shall the technical training be included in the secondary school, or shall it be confined to area trade schools or area technical institutes at the thirteenth- and fourteenth-grade levels where, presumably, it might be given more economically? There are some, too, who will say that the growing literature of human development has been neglected in favor of scholarship. The fact remains that the summary is challenging. Let those who would attack it provide a better plan or supplement this one.

STEEL HELMETS VERSUS MORTAR BOARDS

THE following quotation, taken from *New York State Education* and written by Raymond J. Brusgul, a high-school graduate of 1942 who is now serving in the United States Navy, indicates what many servicemen are thinking:

I have talked with fellows everywhere from Casablanca to Trinidad, from Panama to Honolulu to Midway Island. . . . They all say the same thing. They're going to want a chance to get that education they planned before the war took out its awful priority on time. They're going to want to exchange that steel helmet for a mortar board. That's the kind of world we want—the world we know we can make. That's what we're fighting for—waiting for.

Reports from our English-speaking allies indicate that another primary

postwar concern of the veteran is a good job. In preparation for the job, both training and education have a place. Ruth G. Weintraub and Rosalind Tough, writing in the *Harvard Educational Review*, compare the provisions which are being made in Canada, Australia, New Zealand, Great Britain, and the United States. It is certain that the veteran, if he is qualified and wishes to do so, may attend college at government expense. In New Zealand, under the most favorable circumstances the veteran will receive £250 annually in addition to fees for books, instruments, and materials. In Australia the maximum, which can be granted only to those with several dependents, coincides with the maximum in New Zealand, but the minimum is lower. An additional feature of the Australian plan is that soldiers' widows who have not remarried are eligible for similar training at government expense.

Great Britain offers the same maximum, £250, but makes the grant contingent on family income, the government bearing that part of the cost which the individual or his family cannot afford. No secondary training is provided for as yet in Great Britain.

Canada, by way of contrast to Great Britain, offers assistance at both the secondary and the higher levels. Individuals may secure subsidy for a period equivalent to that spent in service. In cases of individual excellence the aid may be extended. The subsidy, similar to that provided in the United States, is much lower

than that in the other countries mentioned above. In addition to transportation and fees, the benefits range from \$44.20 a month for single persons to \$62.40 for married persons, with additional allowances for children.

The G.I. Bill of Rights, as we know, provides a year's grant for tuition and fees up to \$500 plus \$50 a month for single persons and an additional allowance of \$25 a month for dependents. Assistance for an additional period up to three years may be obtained. It is interesting to note that, although many persons thought that the provisions of the G.I. Bill of Rights were extremely generous, they compare favorably only with those of Canada and are far below the maximums allowed in New Zealand, Australia, and Great Britain.

Space forbids discussing the provisions for trade training and "refresher" courses for those who have no disability, although generous provisions are made. It goes without saying that all the English-speaking countries discussed have made elaborate and generous provision for the retraining and educational development of disabled veterans. Parenthetically, we note that the retraining in Great Britain is available not only to veterans but to all disabled persons and that it is expected to cost the nation approximately £3,000,000 annually.

That there will be problems in connection with the administration of these educational opportunities is

conceded. The following quotation lists some of these problems and suggests partial answers:

Postwar planning for the education and rehabilitation of the returned veteran has again focused the spotlight on areas of conflict. The problems of trade-union restrictions versus the demands for vocational education, local versus central control of education and the freedom of educational institutions from governmental constraint have to be met anew and in a more imaginative way.

Experiments with democracy in administration are being tested in New Zealand, where local supervisory committees have been set up with representatives of veterans' organizations, of labor, capital, and government to determine the suitability of the ex-soldier trainee for entrance and continuance in the vocational-education program. Moreover, these committees supervise the "on-the-job" training program and check on whether adequate classroom training is provided in such instances. Support by both trade unions and management for the new veterans' educational program is thus assured.

Postwar reconstruction has as one of its integral parts the responsibility for retraining and educating the men and women from the services. How this will affect both higher institutions and secondary schools cannot be described in detail, but it is certain that education can never again retreat to the ivory tower. It is certain, too, that the assistance of all groups concerned with the welfare of our nation—management, labor, government, and the lay public—must be sought by the professional educators. We cannot do the job alone.

CAN WE RE-EDUCATE THE ENEMY?

SPEAKING on the University of Chicago Round Table, William G. Carr, executive secretary of the Educational Policies Commission; William F. Russell, dean of Teachers College of Columbia University; and Robert J. Havighurst, professor of education at the University of Chicago, discussed the problem of re-educating the enemy and came to several general conclusions. The discussion revolved about Germany, since both the participants and the listeners had more knowledge of European than of Japanese educational practices. Most children in Germany attend the folk schools, where they get a modified form of the three R's. In the words of Dean Russell, as shown in the pamphlet reporting the broadcast (*Can We Re-educate the Enemy?* University of Chicago Round Table Transcript, No. 322), these schools turn out:

God-fearing, obedient, self-supporting subjects of the Reich. . . . The teacher tells him what to do, and he does it; the teacher tells him what to remember, and he remembers it; the teacher tells him what to learn, and he learns it. . . . The result is that the children come out looking for a leader, are glad to find a leader, are seeking for one, and are happy to do what he tells them to do when they find him.

To this is added the belief in the master-race and anti-Semitism. The three Round Table participants agreed that the educational system must be changed so that a third world war could not arise from the prejudices and training which had facili-

tated World Wars I and II. Certainly no group of educators from outside can man the German schools; the reform must be accomplished by persons within Germany. Of course military government can remove the present administrators of educational institutions. But are there any democratic educational leaders left alive? Should the German children be brought in off the streets by the A.M.G., or should military government first find leaders who subscribe to our educational ideology? Perhaps the proposed United Nations Office of Educational Reconstruction can supervise the character of the materials and the nature of the methods. The problems which are faced are admittedly difficult of solution. The discussion is well summed up in the final paragraphs:

We have reached substantial agreement, it seems to me, on certain points. The German educational system, we agree, was instrumental in getting Germany ready for war. Reform of the German educational system is essential if the German nation and the German people are to participate in a peaceful world. We in America and the other United Nations have a moral obligation to do what we as educators can to promote reform of education in Germany. To do this, we must find the friends of democracy and peace who are already in Germany and give them our practical and moral support. Reform of education in Germany can be brought about only by making it a part of an international program of co-operation through an international office of education.

American educators must co-operate with those of other countries to bring about this reform. Much thought and sacrifice on our part in America are necessary in order

to solve the problem of American co-operation in the reconstruction of education in the postwar world.

The problem in Japan is many fold more difficult, but even there the task is not hopeless. Perhaps the bringing of thousands of young people to study in our universities and the sponsoring of co-operative studies such as have been followed in cities in this country and as suggested by Dean Russell will help bring democratic ideology into the schools of our present-day enemies. Education in these countries did not cause the war; it contributed to the war. Fortunately for future peace, the importance of education to the peoples of the world is being recognized by the political leaders of the United Nations.

WHAT KIND OF EDUCATION WILL PROMOTE ENDURING PEACE?

CLOSELY related to the topic of re-educating our enemies is the question propounded above. A philosophic answer to the question is given in the *Educational Forum* by William H. Kilpatrick, emeritus professor of education of Teachers College, Columbia University. As first considerations, Kilpatrick lists four conditioning factors of peace:

1. *A general economic prosperity* is essential to any reasonable hope of an enduring peace. Without such prosperity no self-respecting nation can remain satisfied. Moreover, without this prosperity its young men, lacking occupation, will furnish dangerously inflammable material for another revolution. . . .

2. *National self-respect* is a further essen-

tial in any peace program. With the human individual in general, the demand that one may respect himself before his fellows is possibly the most insistent of all nonphysiological urges. When then a nation feels itself denied a healthy and legitimate self-respect, it will likely seek unhealthy and socially hurtful forms of self-respect. . . .

3. Our own broader *acceptance of moral obligation for law and order* is a third essential to any adequate education for enduring peace. Slowly has the world advanced to the point where an effective majority now accepts the moral obligation to defend law and order within the country. The next step is to accept moral responsibility for world-wide law and order. . . .

4. Finally, *only upon inner acceptance by the conquered nations* can any program of education for peace expect to build itself.

Kilpatrick then discusses the actual program as operating in three periods: (1) the emergency period between the cessation of direct hostilities and the establishment of stable government by the Allied Military Government—a period which, presumably, will be short; (2) the transition period, or the one in which the schools are placed under the control of the “proper” persons in the conquered countries—a period which will be relatively long and comparable with that discussed above by Messrs. Havighurst, Russell, and Carr; (3) the period of international educational endeavor, identified by such characteristics as fostering the exchange of students and teachers and the exchange of educational information. The operation of an international educational office, discussed in these news notes in January, 1944, should greatly facilitate developments in the third period.

STATE RECIPROCITY IN TEACHER CERTIFICATION

FROM time immemorial, teachers have migrated from one state to another in search of higher salaries, of real or fancied improvements in living conditions, or for more personal reasons. Many of them have wondered, often with some irritation, whether certification officials were facilitating the process or were actually throwing up “road blocks” at every opportunity. Facts relative to the problem have recently been published in the *North Central Association Quarterly* by John R. Emens, of the Board of Education at Detroit, and his associates on one of the subcommittees of the North Central Association of Colleges and Secondary Schools. The war has increased the mobility of teachers, decreased the supply of well-trained teachers, and increased interest in the free exchange of teachers across state lines. From their correspondence with state departments of education, teacher-training institutions, and employing officials, Dr. Emens and his subcommittee draw some pertinent conclusions:

The paramount impression which the Committee gained from this study is . . . a universal desire for a workable and acceptable plan for the free, unhampered movement of teachers across state lines. The prerequisite upon which the majority seemed to insist is graduation from an accredited teacher-educating institution.

Second in frequency of mention and discussion were expressions of impatience with variations in terminology, and in course titles and content. The willingness of groups

within states to criticize specific courses or other requirements peculiar to their own states was marked. General recognition was given to the fact that local exigencies responsible for isolated course requirements within a given state quite frequently are beyond the control of local certification authorities; but it was contended that they could be alleviated by provision for one-year temporary certificates.

It was suggested, too, that the North Central Association should assume leadership in securing co-operative agreements and a minimum program. The subcommittee will do what it can toward that end, but no association alone can secure the needed reforms to facilitate the ready transfer of well-qualified teachers from one state to another. Employing officials should make their wishes known to certifying agencies and should lend support to those groups which are attempting to secure reciprocity for well-trained teachers.

KANSAS CITY SCHOOLS SHARE COMMUNITY RESPONSIBILITIES

THROUGH the courtesy of Herold C. Hunt, superintendent of schools in Kansas City, and J. C. Bryan, director of secondary education in that city, we are privileged to present several items of interest concerning recent developments in the schools of Kansas City, Missouri.

Perhaps the most significant development is the addition of Grade VIII to be consummated in the autumn of 1946. For many years Kansas City had a seven-year elementary school and a four-year high school.

The change does not indicate that the seven-year elementary school has failed but rather a conviction of Superintendent Hunt and his colleagues that a better-rounded program can be furnished in twelve years than in eleven.

Another item of interest from Kansas City is the innovation of a fusion course in English and civics, inaugurated in 1942. This course was further developed during 1943-44. Much interest on the part of teachers has been evidenced, and it is anticipated that the development will be furthered in 1944-45. Such fusion courses are, in themselves, no innovation, but their widespread introduction in a large city community is to be commended.

During the year the Board of Secondary School Principals, under authorization of the State Department of Education, revised the requirements for graduation from high school. The revisions were in the direction of simplification and the lessening of specific requirements, students thus being given greater latitude for meeting individual needs and interests. The number of units required for graduation was reduced from seventeen to sixteen, including three units in English, one unit in mathematics, two units in science, three units in social science, one unit in physical education, and six elective units.

Near the end of the school year, in co-operation with the State Department of Education and the College of

Agriculture at the University of Missouri, Victory Farm Volunteer courses (farm worker training) have been offered in Missouri schools. On May 19 a group of ten of the students of the Victory Farm Volunteer courses was taken on a placement tour to Atchison and Holt counties in northwest Missouri. A week later a group of forty students was taken on a placement tour through the central-west portion of the state. A majority of the students taking these tours have been accepted for summer employment on the farms visited.

In the latter part of October, 1943, secondary-school students supplied more than three thousand student-periods of aid in the issuance of ration books. To the Community Fund and War Chest students contributed forty-six hundred dollars, and to the Red Cross fund they contributed over seventy-five hundred dollars. Each of these drives was made the occasion for desirable instruction in social obligations. In November secondary-school students gathered 189 tons of wastepaper for the war effort, and some of the schools made additional contributions at other times during

the year. In January students conducted a house-to-house canvass of the city distributing literature concerning the fourth war-bond drive and the War Production Board's tin-can salvage campaign. During the third and fourth war bond sales campaigns, schools furnished Boy Scouts daily for work at campaign headquarters.

Co-operating with the City Welfare Department, schools have made progress during the year in finding solutions to certain "youth problems" in the separate communities. The establishment of recreational centers, "Teen Towns," has been one of the most conspicuous outcomes of the co-operation. Nine such recreational centers have been developed.

These developments indicate that the school and the community are sharing their mutual responsibilities toward the adolescents of Kansas City. They furnish another illustration of a school which strives to co-ordinate, not to administer directly, the institutions and agencies which influence the wholesome development of young people.

PAUL B. JACOBSON

WHO'S WHO FOR SEPTEMBER

Authors of news notes and articles The news notes in this issue have been prepared by PAUL B. JACOBSON, superintendent of schools at Davenport, Iowa. RALPH W. TYLER, professor and chairman of the Department of Education, acting dean of the Division of the Social Sciences, and University examiner at the University of Chicago, maintains that the school has responsibility not only for improving the individual but also for seeking the reforms in the social environment which are necessary to improve the opportunities for the education and development of youth. RAYMOND D. BENNETT, associate professor of education at Ohio State University, presents data for the years 1883-1943 showing the trends in the amount of mathematics and science taken by high-school pupils and the influence which state and college requirements have had on these trends. The UNIFIED ARTS COMMITTEE of the Laboratory Schools of the University of Chicago describes and evaluates an experiment with a unified arts program in the Laboratory Schools. JOE PARK, director of teacher training and visual education at Evansville College, Evansville, Indiana, compares the verbal accom-

paniment to classroom sound films with the materials which children read in order to determine whether the vocabulary burden of films is too great and whether the sentences are too long. CORNELIA CAMERON, instructor in geology at Stephens College, Columbia, Missouri, maintains that geology has a place in general education and suggests ways in which geology may be taught so that it will be meaningful to all pupils. PERCIVAL W. HUTSON, professor of education at the University of Pittsburgh, presents a list of selected references on guidance.

Reviewers of books E. C. BOLMEIER, director of secondary education in the public schools of Jackson, Mississippi. MORRIS E. ESON, research assistant in the Orthogenic School at the University of Chicago. CHARLES H. SCHUTTER, chairman of the department of mathematics at Steinmetz High School, Chicago, Illinois. HARRIETT COCHRAN RICHARDSON, teacher in the commercial department at Lyons Township High School and Junior College, La Grange, Illinois. VIRGINIA H. SCHYE, teacher of aeronautics and science at Wells High School, Chicago, Illinois.

THE RESPONSIBILITY OF THE SCHOOL FOR THE IMPROVEMENT OF AMERICAN LIFE¹

RALPH W. TYLER
University of Chicago

*

THE relation of school and community is not a static condition. Throughout the history of Western civilization this relationship has fluctuated. At times centers of education have been near the market place, in the halls of government, and in the shade of vineyards. At other times institutions of learning have retreated to ivory towers far from the bustle and the turmoil of the lay community. Even in recent times we have seen movements both to relate the school more closely to life and to sever such connection. In the United States, although education is recognized as a major function of the state, the responsibility of the school to and for the community has not been formulated in terms which are acceptable to all and which provide a basis for common practice. Statesmen and school men have for generations attempted to clarify this reciprocal relationship.

A phase of this controversy was brought to a head in the thirties, precipitated perhaps by the publication of Professor Counts's provocative volume, *Dare the School Build a New*

*Social Order?*² The issue raised by Counts was intensified by our reaction to the Nazi program for the schools in Germany—a program that provides for thoroughgoing indoctrination and complete subservience of the schools to the immediate purposes of the party. The identification of totalitarianism with social reform through education caused many an educator to reject the idea that the school has a responsibility for the improvement of American life. The neutrality conception became popular. According to this policy the schools took no critical view of American life nor assumed any initiative in its formation. Students were to be informed about life and were to learn of conflicting points of view, but the school took no sides in such matters. The school was to be no partisan agent; it was to champion no single set of values.

Then, with our involvement in the war, the opposing position was again sharply raised. Writers, journalists, and political leaders questioned the school's effectiveness in developing students who are committed to the

¹ An address given on July 17, 1944, at the thirteenth annual Conference for Administrative Officers of Public and Private Schools.

² George S. Counts, *Dare the School Build a New Social Order?* New York: John Day Co., 1932.

core values of our society. The school, it is now maintained, is, or should be, an active agent in American life. Youth, so we are told, should be trained so that they will cherish our national ideals and institutions and be ever willing to fight for them. Many schools are now sharply reversing their previous policy of neutrality in favor of this current emphasis.

These sharp reversals in policy, these widely fluctuating conceptions of the school's relation to American life, indicate a failure of educators to analyze the problem adequately and thus to reach a carefully and clearly formulated position. It is the thesis of this paper that the school has responsibility for improving American life. Improving American life, however, is not to be confused with using the schools as instruments for the attainment of a particular blueprint of social organization and economic system. Since many recent writers have pointed out the fallacy in the assumption of any such responsibility, we need not repeat the arguments against this conception of the school's task.

CONTRIBUTION OF THE COMMUNITY SCHOOL

There is, however, a current interpretation of the school's responsibility for the improvement of American life represented by the community school. This type of school has developed a program designed directly to contribute to certain phases of community life. In these community

schools the major function of the school is still to educate young people, but opportunity for young people to analyze significant community problems and to participate in the attack on these problems is provided in order to train youth and at the same time to make an immediate contribution to community life through the products of youth's efforts. The Holtville School in Alabama and the Tallapoosa School in Georgia are well-known illustrations of community schools. Holtville has developed a core curriculum, occupying approximately half of the student's time, in which community problems are studied and worked on. For example, the serious plight of the local farmers due to decreasing production was a subject of study, and, as a result of reading and investigation, the school children took some part in building check dams to reduce erosion and in meeting with farmers to explain the values and the methods of crop rotation and of diversified farming. The children also studied the diet problems of the community, and their study led them to arouse the adults to producing a wider range of foodstuffs and also to set up a co-operative cold-storage plant which enabled community members to have fresh fruits and fresh meats throughout the year. These illustrations could be multiplied many times from the records of community schools.

The work of the community schools has been of great value, and I should not want to underestimate it. However, in the conduct of such a school

the primary responsibility for education must never be overlooked or slighted. The value of the program for education is not to be measured in terms of the dams made or the crops produced. These direct contributions to the community are valuable, but for the school they are only by-products. The educational contribution of community schools is in teaching young people how to study important problems in their own communities, in showing them the values of a co-operative attack on these problems, in teaching them techniques of co-operative work, and in developing certain work habits and skills, together with a sense of responsibility.

There are two ever-present temptations to be avoided in a community-school program. The first is the exclusive concentration on the community activity as the sole type of educational experience. Valuable as its educational outcomes are, the community-action program cannot include all the most effective educational experiences needed by youth. A proper balance must be achieved among all the types of educational activities required to provide a well-rounded program for children and youth.

The second temptation is to think of the direct contributions to the community's economic income as the ends of the community school. These contributions are but means; the end is the education of the students. When the economic contributions to the

community are conceived as ends, the children and the youth are likely to be viewed only as means, and the community program becomes no better than a child-labor activity under enlightened auspices. Hence, even in the community-school idea, we do not find the definition of the school's responsibility for the improvement of American life. To see more clearly what the school's responsibility is, we must first consider the primary purpose of education and examine the relevant implications of this purpose.

IMPROVING THE INDIVIDUAL

What is and always has been the purpose of education? It is to change the behavior of human beings, using the word "behavior" in the broad sense to include thinking, feeling, and acting. As a result of schooling, we expect the status of young people to be different from their status at the time that they entered the school. They will have different ideas, different habits, different skills, different attitudes, different ways of thinking. Changing human beings in this way is the essential nature of education.

But what kinds of changes do we seek? Are we trying to mold the young to be exactly like the adults in our society? Education has always two elements, the past and the future.

From the past we select, within the limits of our wisdom, the ideas, the knowledge, the skills, and the ideals which we believe to have contributed most to the development, the

strength, and the goodness of mankind. We do not seek to inculcate all the habits, attitudes, prejudices, and petty reactions man has acquired. We seek to distil those aspects of our heritage which, though possessed imperfectly by any of us, are seen even dimly to have potentialities for living a better, happier, and more productive life.

Furthermore, education has the element of future in it. The child has within himself possibilities for future development that frequently surprise and delight us. As he masters tools of thought, as he is stimulated by the ethical and the aesthetic ideals of our civilization, and as he is given opportunity for his own expression and for the exercise of his own personality, the youth may become the man who makes new additions to our civilization. Education seeks to develop these new potentialities as well as to utilize the best of our heritage.

These facts are obvious to all of us. I point them out again only to remind us that, in teaching, we are in a very real sense seeking to improve American life through the improvement of children and youth. Hence the first respect in which a good school contributes to the improvement of American life is in developing students who, because they feel humanely, think critically, and act creatively, are in themselves important factors in the improvement of life. When this job is well done, the life of the next generation cannot but be a marked improvement over ours.

IMPROVING THE SOCIAL ENVIRONMENT

There is another respect in which the school has some responsibility for the improvement of American life. Education is not something which goes on only in the school. When a child is not in school, he is not in a vacuum. The home, the church, the press, the movies, the gang—all the child's environment, especially the social environment, influences his development. For example, the Payne Fund Studies of Motion Pictures and Youth demonstrated conclusively that the ideas about the world and about life which young people get from motion pictures are retained more vividly than many ideas obtained in school. The effect of motion pictures on attitudes and on conduct is also striking and greater than many school influences. If the ideas that the youngsters obtain from movies are untrue or misleading, if the attitudes and conduct engendered by motion pictures are opposed to those sought by the school, then our educational efforts will be nullified at those points and the school's goals will not be realized.

A similar condition exists with reference to many other aspects of the child's environment. An effective and thoroughgoing job of education demands more careful study of the total environment of our young people and more effort so to control that environment that it will provide an atmosphere and the conditions conducive to the growth and the develop-

ment that we are seeking to achieve. In this sense the school cannot sit idly by, unconcerned with the nature of the community in which its children grow up. It is perhaps more obvious to many of us that we are derelict to our duty when we permit safety hazards and health hazards to exist in the school neighborhood; but in some respects the psychological, the social, and the emotional hazards and conflicts surrounding our young people have more disastrous effects on them than have the health and safety hazards.

There are, then, some social issues on which school men must take a stand and on which we cannot remain neutral. These are the matters that affect the very opportunities for the education of the children in our community. The responsibility of the school for the improvement of American life includes not only what the school does with children while they are in school; it also includes responsibility for helping to create and to maintain an educative social environment. This means that the school will take the leadership in initiating those reforms necessary to provide opportunities for education. In many cases our failure to take leadership in these reforms has meant that, within certain sections of the community, education has largely been nullified.

The particular conditions which limit or deny education to many children in a given community are so varied and subject to such change that they require continuous study

and eternal vigilance. In some cases the limiting factor may be the poisoned propaganda of a partisan newspaper that so blinds the vision of young people as to warp their conception of social reality and to dry up the springs of social idealism. In others it may be the lack of any beauty—of trees, parks, homes, music, and art—that sterilizes taste and makes life commonplace. In still other cases it may be the over-protection of parents who fail to give young people opportunities for the all-important experiences of self-direction and assumption of responsibility. Even the school may partake of these educationally inhibiting conditions. It may be that the school has become like a cold or brittle machine, with teachers watching the clock and concerning themselves more with getting through the school day than with providing warm and affectionate guidance to their charges. Because these limiting conditions are so numerous and are not always easy to recognize, they are not likely to be eliminated or improved unless school people take active leadership. This is the second type of responsibility of the school for the improvement of American life.

This second type of responsibility may not seem so dramatic as laying out the blueprint of a new social order. It does not involve vociferous support of social dogmas, political doctrines, and economic panaceas. However, it does involve broad understanding and specialized competence. It requires knowledge of edu-

cation and of child development in order to recognize factors in the environment that are not likely to be recognized by the layman until their devastating effects have become obvious. It requires courage, persistence, and wisdom in order to gain the social action required to improve these limiting conditions of educational development.

This paper makes no attempt to formulate a novel position about the school's responsibility. It seeks to clarify the implicit responsibilities which schools have always had for improving life through the development of an improved generation. It also seeks to point out that, whereas school people, as school people, have

no more responsibility than have any other citizens for seeking the reform of social institutions in general, school people do have, by the very nature of their task, responsibility for seeking those reforms necessary to improve the opportunities for the education and the development of children. These two responsibilities for the improvement of American life require the devotion to education and the professional competence that only wise and experienced educators can have. We must meet these responsibilities in the future more adequately than we have in the past. If we do not, the disintegrating forces of conflicting social environment will neutralize our efforts at education.

TRENDS IN THE AMOUNT OF MATHEMATICS AND SCIENCE TAKEN IN HIGH SCHOOL

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OUR nation's experience in training young men for service in the armed forces has given new stimulus to the critical study of present programs in secondary education. In the areas of mathematics and the natural sciences, questions relative to the trends in high-school instruction have been especially insistent. Reliable objective data derived from official records concerning the extent to which high-school students have taken courses in these fields should assist teachers and administrators in appraising the present situation and the need for its improvement. The data presented in this report will constitute partial answers to questions concerning the amount of instruction and recent enrolment trends in mathematics and science. Because of the character of these data, they obviously will offer no assistance in evaluating the effectiveness of this instruction.

SOURCE OF DATA

The data here presented are derived from studies of the educational background of students—studies which have been carried on for several years by the College of Education of Ohio State University as a part of the

guidance program of the college. These data have been taken from an analysis of the students' high-school records, an analysis made in terms of the number of units completed in each of the high-school subjects of instruction.¹ Such information has had a two-fold value in guidance: (1) it has given us a picture of the secondary-school background of the college students themselves, and (2) it has indicated certain long-time trends in enrolment which must be taken into account in forecasting future demands for teachers of the various subjects.

The study at the close of 1943 covers 7,208 high-school graduates, each of whom, for a longer or a shorter period, has been enrolled in the College of Education. It includes a sampling of about 250-300 persons for each year of high-school graduation from 1920 to 1943, inclusive, in addition to 517 persons who were graduated from high school before 1920. Ninety-one per cent of these students were residents of Ohio. About 70 per cent were women, 30 per cent men. These stu-

¹ For a similar study in another area, see Raymond D. Bennett, "United States History in Our High Schools," *School and Society*, LVIII (August 21, 1943), 126-28.

dents represent a typical cross-sectional sampling of the college population—good, average, and poor students—nongraduates and graduates. These data, in every case, have been derived from the official transcripts

able answers to such questions as the following: (1) What percentage of the pupils have included courses in algebra, geometry, chemistry, physics, or biological sciences in their high-school programs? (2) How many high-school

TABLE 1
PERCENTAGE OF 7,208 STUDENTS WHO COMPLETED SOME MATHEMATICS OR PHYSICAL SCIENCE IN HIGH SCHOOL, 1883-1943

YEAR OF HIGH-SCHOOL GRADUATION	NUMBER OF STUDENTS	PERCENTAGE OF STUDENTS COMPLETING COURSES IN			
		Algebra	Geometry	Physics	Chemistry
1883-1909.....	92	100.0	98.9	84.8	28.3
1910-14.....	143	99.3	97.2	79.7	32.9
1915-19.....	282	98.9	96.1	73.8	35.1
1920.....	252	99.6	96.8	62.7	41.3
1921.....	246	98.0	92.7	62.6	44.3
1922.....	246	98.8	96.4	58.2	48.8
1923.....	244	98.8	96.7	49.6	50.8
1924.....	275	98.2	93.1	45.9	53.5
1925.....	282	99.3	95.1	40.9	51.8
1926.....	310	99.4	92.3	46.2	45.5
1927.....	317	98.4	93.1	46.4	55.5
1928.....	301	99.7	92.4	46.2	50.2
1929.....	283	97.5	91.9	43.2	59.1
1930.....	266	98.5	91.7	46.7	56.4
1931.....	244	99.2	92.2	42.7	56.6
1932.....	246	98.4	91.5	41.1	65.4
1933.....	247	96.3	91.5	36.8	67.6
1934.....	248	96.4	87.9	37.5	62.5
1935.....	251	98.8	93.2	35.9	67.7
1936.....	249	95.2	86.8	36.1	63.1
1937.....	268	96.6	88.9	30.2	64.1
1938.....	372	95.4	81.5	30.1	56.7
1939.....	279	96.4	90.7	32.6	61.7
1940.....	205	95.3	84.1	27.5	58.0
1941.....	292	94.5	82.5	27.0	56.2
1942.....	348	91.1	79.9	24.7	56.9
1943.....	300	94.0	80.0	18.7	53.7

furnished by the high schools to the Admissions Office of the University.

The more significant findings concerning mathematics, particularly algebra and geometry, and concerning the natural sciences—physics, chemistry, and biology—may be of interest. So far as the 7,208 students are concerned, the findings furnish depend-

credits did the pupils earn in each of these subjects? (3) What long-time trends are found as to the amount of instruction that the students have received in each subject?

TRENDS IN MATHEMATICS

In the case of algebra, as indicated in Table 1, there has been a slight, but

only a slight, downward tendency over the years in the percentage of students who have taken the subject terms of the average number of units of high-school algebra completed by each student, the downward trend, as

TABLE 2
AVERAGE NUMBER OF UNITS IN HIGH-SCHOOL MATHEMATICS AND SCIENCE
COMPLETED BY 7,208 STUDENTS COMPARED WITH STATE AND
COLLEGE REQUIREMENTS IN MATHEMATICS, 1883-1943*

YEAR OF HIGH-SCHOOL GRADUATION	NUMBER OF STUDENTS	AVERAGE NUMBER OF UNITS COMPLETED BY EACH STUDENT						MATHEMATICS UNITS REQUIRED	
		Algebra	Geom- etry	Total Mathe- matics	Physics	Chemis- try	Biology	State High- School Grada- tion	College of Edu- cation En- trance
1883-1909....	92	1.38	1.35	2.79	0.87	0.28	0.14	.....	3
1910-14.....	143	1.42	1.30	2.75	.80	.33	.10	I	2
1915-19.....	282	1.36	1.20	2.59	.74	.35	.15	I	2
1920.....	252	1.30	1.17	2.51	.60	.41	.29	.....	2
1921.....	246	1.26	1.09	2.41	.63	.42	.44	.....	2
1922.....	246	1.25	1.14	2.40	.58	.49	.45	.....	2
1923.....	244	1.24	1.09	2.34	.50	.51	.52	.....	2
1924.....	275	1.24	1.08	2.35	.46	.54	.51	.....	2
1925.....	282	1.26	1.10	2.38	.47	.52	.52	.....	2
1926.....	310	1.24	1.08	2.35	.46	.45	.56	.....	2
1927.....	317	1.25	1.08	2.38	.46	.56	.57	.....	2
1928.....	301	1.27	1.08	2.38	.46	.50	.59	.....	I
1929.....	283	1.24	1.09	2.38	.43	.59	.66	I	I
1930.....	266	1.26	1.08	2.36	.47	.56	.63	I	I
1931.....	244	1.28	1.10	2.42	.43	.57	.64	I	I
1932.....	246	1.26	1.08	2.36	.41	.66	.64	I	I
1933.....	247	1.25	1.07	2.37	.37	.68	.63	I	I
1934.....	248	1.21	1.03	2.28	.38	.65	.69	I	I
1935.....	251	1.25	1.10	2.36	.36	.68	.67	I	I
1936.....	240	1.18	.96	2.26	.36	.63	.67	I	I
1937.....	208	1.18	1.01	2.22	.30	.64	.73	.....	I
1938.....	372	1.18	.91	2.10	.30	.57	.71	.....	.....
1939.....	279	1.22	1.02	2.40	.32	.62	.67	.....	.....
1940.....	295	1.15	.89	2.11	.27	.58	.78	.....	.....
1941.....	292	1.14	.91	2.16	.27	.56	.73	.....	.....
1942.....	348	1.12	.86	2.17	.25	.57	.73	.....	.....
1943.....	300	1.11	0.85	1.97	0.19	0.54	0.75	.....	.....

* The average for each subject is based on all the students reported, not merely those who completed the subject; that is, the average equals the total number of units completed by the students who were graduated in each year divided by the number of students in the graduating class.

in high school. Of the 769 high-school graduates of 1920 and earlier, 764 persons, or 99.4 per cent, reported credit in algebra; for the five years 1921-25, 98.2 per cent. By 1943 the percentage had dropped to 94.0. Measured in

indicated in Table 2 and in Figure 1, is somewhat steeper.

Geometry shows a considerably sharper downward trend than algebra, whether measured by the number of students having studied the subject or

by the average amount of credit which each student earned. Of the 769 graduates of 1920 and earlier, 745, or 96.9 per cent, had taken some geometry in high school; for the five-year period ending in 1925, 95 per cent. In 1943, however, the percentage was 80.0, while the average number of units re-

complete only one unit, instead of one and one-half units, in algebra or geometry. These trends are shown graphically in Figure 1 and are analyzed in detail by the data in Table 3.

The period showing the largest average amount of algebra completed in high school (1.42 units) was the

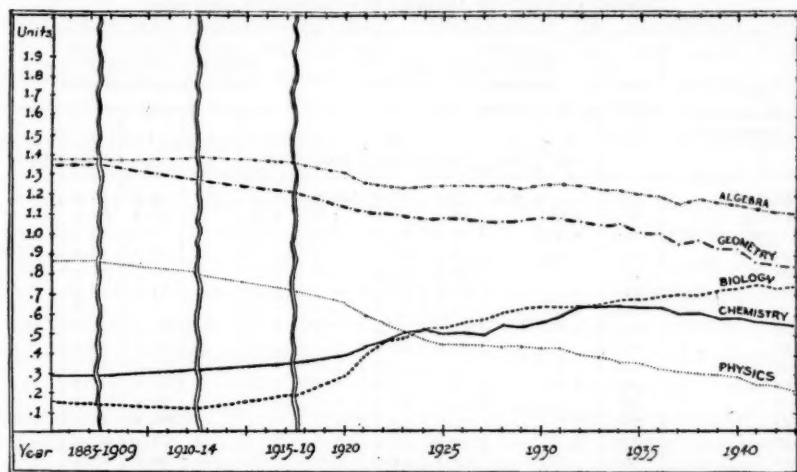


FIG. 1.—Trends in amount of mathematics and natural science completed by 7,208 high-school graduates, 1883-1943. Three-year overlapping averages, based on the year averages in Table 2, have been used in plotting the trends in this figure; for example, the point plotted for 1940 is the average of the three averages for 1939, 1940, and 1941.

ported for each student had fallen from 1.35 for the earliest group to 0.85 for the graduates of 1943.

The rate of decrease, as expressed by the average number of subject-units completed by each student, shown in Table 2, is influenced both by (a) the decreasing percentage of high-school students taking the subject and more especially by (b) the increasing tendency in later years to

period of 1910-14, when 76.2 per cent of the graduates had completed one and one-half years of algebra, 18.2 per cent had completed one year, and 4.9 per cent reported two years. Beginning with 1915-19, the percentage reporting one and one-half units shows a constant decrease, accompanied by a corresponding increase in the percentage reporting one unit. In 1943, 71.0 per cent reported one unit, while

only 12.7 per cent reported one and one-half units and 10.3 per cent reported two units.

The same trend appears in the case of geometry. For 1910-14, 62.9 per

TRENDS IN SCIENCES

The physical sciences, physics and chemistry, present a different picture. Instead of variation in the length of the high-school courses reported by

TABLE 3
PERCENTAGE OF 7,208 HIGH-SCHOOL GRADUATES WHO COMPLETED THE INDICATED
NUMBER OF UNITS IN ALGEBRA AND GEOMETRY, 1883-1943

YEAR OF HIGH-SCHOOL GRADUATION	NUM- BER OF STU- DENTS	PERCENTAGE OF STUDENTS COM- PLETING UNITS IN ALGEBRA					PERCENTAGE OF STUDENTS COM- PLETING UNITS IN GEOMETRY				
		0 Unit	$\frac{1}{2}$ Unit	1 Unit	1 $\frac{1}{2}$ Units	2 Units	0 Unit	$\frac{1}{2}$ Unit	1 Unit	1 $\frac{1}{2}$ Units	2 Units
1883-1909.....	92	.....	1.1	32.6	55.4	10.9	1.1	1.1	34.8	53.2	9.8
1910-14.....	143	0.7	.....	18.2	76.2	4.9	2.8	.7	32.2	62.9	1.4
1915-19.....	282	1.1	.....	31.9	61.0	6.0	3.9	.....	50.3	43.3	2.5
1920.....	252	.4	.....	41.3	56.2	2.2	3.2	.4	56.7	38.1	1.6
1921.....	246	2.0	.....	48.4	43.5	6.1	7.3	.8	59.4	31.3	1.2
1922.....	246	1.2	.....	51.2	43.5	2.7	3.7	.....	65.5	28.0	2.5
1923.....	244	1.2	.....	54.1	39.8	4.9	3.3	.....	71.7	24.6	.4
1924.....	275	1.8	.....	52.7	40.4	5.1	6.9	.....	65.1	25.8	2.2
1925.....	282	.7	.....	52.5	41.1	5.7	5.0	.4	64.9	29.4	.4
1926.....	310	.6	.....	55.2	39.0	5.2	7.8	.3	61.6	29.0	1.3
1927.....	317	1.6	.....	53.9	37.2	6.9	6.9	.3	63.1	28.4	1.3
1928.....	301	.3	.....	51.2	41.9	6.6	7.6	.3	60.5	30.9	.7
1929.....	283	2.5	.....	53.4	34.6	9.5	8.1	.....	60.8	28.3	2.8
1930.....	266	1.5	.....	53.8	35.7	8.6	8.3	.4	61.3	27.4	2.6
1931.....	244	.8	.....	53.3	34.4	11.1	7.8	.....	59.8	28.7	3.7
1932.....	246	1.6	.....	52.1	37.8	8.5	8.5	.....	62.6	24.4	4.5
1933.....	247	3.7	.....	49.4	36.0	10.9	8.5	.....	63.2	25.5	2.8
1934.....	248	3.6	.....	56.9	30.2	9.3	12.1	.4	60.5	24.2	2.8
1935.....	251	1.2	.....	57.7	30.3	10.8	6.8	.....	65.3	23.1	4.8
1936.....	249	4.8	.4	57.0	22.1	13.7	13.2	.8	65.9	20.1	.....
1937.....	298	3.4	.3	61.7	25.2	9.4	11.1	.3	65.8	21.1	1.7
1938.....	372	4.6	.....	63.4	17.0	15.0	18.5	.3	65.1	14.5	.8
1939.....	270	3.6	.....	58.8	23.6	14.0	9.3	0.7	67.7	21.5	.7
1940.....	295	4.7	0.3	68.1	14.9	11.8	15.0	.....	74.6	8.5	1.0
1941.....	292	5.5	.....	66.8	17.5	10.3	17.5	.....	65.1	17.1	.....
1942.....	348	8.9	.....	64.1	12.9	14.1	20.1	.....	66.7	12.9	0.3
1943.....	300	6.0	.....	71.0	12.7	10.3	20.0	.....	70.7	9.3	.....

cent of the graduates reported one and one-half units of geometry, and 32.2 per cent reported one unit. In 1943, 9.3 per cent reported one and one-half units, while 70.7 per cent reported one unit.

the students, there is uniformity. The one-year course in physics and in chemistry has been standard as far back as this study has gone. Those students who elected one or both of these sciences almost without excep-

tion reported one unit of credit in each subject. So far as this group of over seventy-two hundred students is concerned, there has been a steady decline over the years in the percentage of students who have had high-school physics. On the other hand, chemistry shows a continuously increasing percentage of enrolments up to about 1935, followed by a slight decline from that date until 1943. Physics was more frequently reported than chemistry up to about 1923; since 1923 chemistry has led in enrolments.

In 1910-14 four of every five college entrants presented high-school credit in physics; one of every three entrants, in chemistry. Now the positions are reversed, with 54 of every 100 reporting one unit in chemistry and only 19 reporting physics.

The trends in two biological-science subjects may be briefly summarized. Botany, which was reported by 60 per cent of the graduates of 1910-14, has gradually all but been eliminated and in 1943 was reported by only 7 per cent. General biology, on the other hand, taken in high school by only 14 per cent thirty years ago, has gained consistently in enrolments throughout the period studied. In 1943 the subject was reported by 73 per cent of the graduates; all but a negligible percentage had completed a full year.

INFLUENCE OF REQUIREMENTS

In a report of this kind the following question naturally arises: To what

extent have changes in the standards for high-school graduation set up by the state department of education and changes in the requirements for college admission been responsible for the trends reported in the preceding paragraphs, especially for the downward trends in mathematics? Ohio high-school standards required one unit of mathematics for graduation from 1914 through 1919 and again from 1929 through 1936. No mathematics was required from 1920 through 1928 nor from 1937 to 1943. The admission requirement of the College of Education was three units of mathematics from the founding of the college in 1907 through the year 1909-10; two units from 1910-11 through 1927-28; one unit from 1928-29 through 1937-38. No mathematics has been required from 1938-39 to 1943-44. Thus, except for the years 1907-10, the two-unit college requirement would seem to set the minimum standard operative through 1927. From 1929 to 1943 the minimum requirements of the State Department and of the College of Education have been almost identical—one unit from 1929 to approximately 1937 and no mathematics requirement since about 1937.

There appears to be little positive evidence of any persistent causal relationship between the changes in the minimum requirements for high-school graduation or college entrance and the moderate but continuous decline in the amount of mathematics reported by high-school graduates. It

will be observed that this decline continues with no significant change of rate through the eighteen-year period of the two-unit entrance requirement and the following ten-year period of the one-unit minimum requirement. On the other hand, our experience with students would encourage the inference that the complete discontinuance of both the graduation and the entrance requirements after 1937 may provide a partial explanation of

the slightly accelerated rate of decline since that date, especially when we take into account the obvious time lag between the election of high-school algebra and admission to college. On the whole, however, we may be nearer to the true explanation if we regard the reduction of requirements and the decline in amount of mathematics reported as co-variants, both affected by the same factors in the total educational situation.

A UNIFIED ARTS EXPERIMENT

UNIFIED ARTS COMMITTEE¹

Laboratory Schools, University of Chicago

★

TENTATIVE STATEMENT OF PHILOSOPHY

THE philosophy underlying the unified arts experiment which is described in this article may be stated as follows: The problems, interests, and needs of boys and girls are met completely not by a curriculum which gives exclusive emphasis to the separate school subjects but by a curriculum which provides for activities that cut across many fields. The curriculum is made up of all those educative experiences for which the school accepts responsibility, the end being the wholesome development of the child. If a child undertakes activities that are significant and important to him and if, with intelligent guidance, he is able to achieve a considerable degree of success, he will acquire over a period of years the skills, the understandings, and the appreciations necessary for wholesome development.

Significant learning must build on present pupil interests, which will gradually be amplified and extended. A child must be active, both mentally

and physically, in order to grow. He must have freedom to move, to investigate, to try out his ideas, to initiate projects, to assume responsibilities, to find his place in the group, to work with materials; for only as learning is used does it take on real meaning and persist. It is the teacher's responsibility to create an environment that is free from purposeless mental and physical strain.

Individual development should proceed in a direction desirable for the social group as well as for the individual concerned, and experimentation to that end should be carefully planned, observed, and recorded.

HISTORY OF THE EXPERIMENT

A continuing experiment in curriculum revision to permit the practical application of the philosophy stated above began in the University High School of the University of Chicago in May, 1941, with a six-week tryout in Grade VIII so that plans could be made for the following year. After presentation of the idea to the class, the pupils divided roughly into the following groups according to their interests: a group of pupils who wished to work on interior decoration and to make model rooms, a crafts group, a camp-cooking group, a play-produc-

¹ The members of the committee are Eugene C. Wittick (chairman), Kathryn D. Lee, Nellie L. Merrick, Margaret H. Pritchard, Lester C. Smith, Mildred C. Letton (1942-43), and Harris R. Vail (1943-44). This report was prepared by Miss Merrick with the assistance of the other members of the committee.

tion group, and a publications group. The results of this trial period were very encouraging.

In the following year all seventh-grade pupils were included in a unified arts program made possible by a combination of the teachers and facilities in the areas of art, home economics, shop, printing, and typewriting (publications). Each pupil spent six weeks in one area and thus rotated through the five areas during the course of the year. A block of time was left at the end of the year for free-choice activities cutting across two or more areas. The groups met two hours on Monday and one hour on the other days of the week, and the meetings were scheduled so that all five groups met at the same hour. The general program was organized according to a series of themes which are described later. Evaluation of the experiences by teachers, parents, and children indicated satisfaction and great interest in seeing the experiment continue.

During the school year 1942-43 this same general plan was followed for both Grades VII and VIII. Instead of the theme idea, an individualized program was followed, and a play-production group replaced the publications group in Grade VIII. Faculty planning meetings were held every week after school hours. Again the results were encouraging.

In the year 1943-44 other curriculum revision in the school made it possible to schedule the arts in both Grades VII and VIII for an hour and a half daily, including two forty-five-

minute periods a week for music. Difficulties in scheduling the teachers' programs eliminated for the time being the experiences in dramatics and prevented the music teacher from working closely with the other arts teachers. The pupils in Grade VII rotated among the five areas for six-week periods, as in 1941-42, and in the block of time that was left at the end of the year they participated in free-choice activities of broader scope. The eighth-grade pupils rotated among the five areas for three-week periods during the first semester and were allowed freedom of choice in the second semester within the limits of room, equipment, and teacher facilities.

TENTATIVE STATEMENT OF PURPOSES

Frequent faculty planning meetings have been held, within the school day when possible. The tentative statements of philosophy and purposes have been continuously examined and revised in the light of subsequent experiences. The purposes, as revised in October, 1943, are as follows:

1. To develop in children a broader familiarity with the arts.
2. To develop in pupils an understanding of the values and the limitations of various materials.
3. To develop children's techniques and skills for self-expression through competence in handling various tools and media.
4. To help pupils appreciate the importance and function of art in everyday life and its use in homes, clothes, cars, objects, etc.
5. To help pupils discover the relationship between the arts through an understanding of the basic principles, such as

balance, rhythm, and proportion, which are common to all.

6. To help pupils sense time, size, distance, shapes, and measurements.

7. To arouse and extend the interests of pupils in leisure and avocational activities and to provide opportunities for developing information and skills in these activities.

8. To help pupils develop self-reliance and self-direction for pursuing their interests and developing their talents.

9. To develop in the pupils those social skills and attitudes which promote effective co-operative work.

10. To provide the children with the opportunity to have experiences that are satisfying and that are therefore of therapeutic value to them.

11. To develop creativeness in the degree that this is possible when children are encouraged to choose and plan their own activities.

LEARNING EXPERIENCES

Each pupil's activities involve experience in each arts area at some time during the year. A wide variety of experiences are available, such as modeling in clay; pottery work; gem-polishing; interior decorating; room arrangement; drawing; painting; block-printing; weaving; molding; wood-turning; sewing; cooking; blueprint-reading; shop sketching; working with plastics; child care; glass-blowing; printing; designing; household mechanics; general woodwork; making school posters; and writing, illustrating, and producing the class newspaper. Since all the groups meet at the same hour, individuals or groups may select a project that involves several teachers and areas. Examples of projects which were undertaken by the pupils are described below.

Seventh-grade projects.—In the first year of the experiment the seventh-grade activities in the unified arts were organized around a series of projects—recreation, doing things for others, home living, hobbies and craft work, and occupations. The recreation unit culminated in a class party, which was planned and carried out as a part of the arts program. Among the things done for others during the Thanksgiving and the Christmas seasons were designing and making decorations for covers for scrapbooks and menus, which were turned over to the Junior Red Cross to be used at Navy and Army hospitals, and dressing dolls, building trucks, etc., for the children of a neighborhood club. The hobby project became so interesting to the children that they organized a hobby show, at which various activities, such as glass-blowing, were demonstrated and hobbies were exhibited. One group brought cameras to school and learned to take indoor and outdoor pictures.

Camp cookery.—A project which required considerable co-operative planning and collaboration in four areas—home economics, shop, art, and typewriting—was the project in camp cookery. A group of eighth-grade pupils learned to make fires, to adjust and to follow recipes in the preparation of food, to cook cabobs, "bread on a stick," "angels on horseback," baking-powder biscuits, etc. They learned to make utensils, such as reflector ovens and pans, wire forks, and various wooden implements for

holding pots and for general use around the fire. Because they wanted to preserve their recipes to show to their friends as well as to have enough copies for group use, they made a book—a process which required the pupils to measure and plan the layout, to prepare the illustrations, and to cut the stencils. In addition, they had innumerable opportunities for developing self-reliance and self-direction as well as for discovering what is involved in truly co-operative group work.

Camouflage project.—A group of boys constructed a model city, which included skyscrapers and a factory section with homes for the workers. Through reading, the boys informed themselves on the general principles of camouflage and applied what they had learned to the factory section of the city. They took a kodak picture of the camouflaged section from above in order to get the general effect of an airplane view of it. In this project they learned that they must work with shapes and shadows as well as with color.

Class newspaper.—The seventh- and eighth-grade newspapers have been a unifying factor in the arts program as well as an interesting experience for the children. Performing at a level satisfying to themselves, the pupils report the news, write and proofread the articles, plan the layout, prepare the headlines and the illustrations, draw the pictures on a mimeograph stencil with a stylus, and learn to type their own stencils. From

ten to fifteen issues, varying in length from one to four pages, are published during a school year. This project involves collaboration with the art area on the lettering and illustrating and with the shop on the printing.

"Americans All—Immigrants All."

—A project which involved the social-science department, and thus cut across departments as well as areas, was the unit on "Americans All—Immigrants All." This unit, in which the entire eighth-grade group participated, attempted to give the pupils a better understanding of the contributions of foreign cultures to American culture. Foreign cooking was emphasized, and a class dinner was planned and prepared by the pupils and the teachers. The groups in the art and home-economics areas planned and prepared everything from the food to the place cards, table decorations, and setting. During the dinner international songs were sung and were followed by a dramatic presentation by the pupils and an exhibit of activities in the shop, publications, and social-science areas.

Dramatics.—When dramatics was offered in the unified arts program, the first students chose choral reading of a wide variety of poems, which were read to the other members of the class at the close of the activity. The dramatic interpretation of ballads was also studied. Other groups during the year studied and produced two radio scripts, read and evaluated plays, made recordings of their own enactments of two radio scripts, and heard

and evaluated a series of radio broadcasts. One group made a model to scale of the school stage, constructed a model of the stage set for each play they produced, and studied and made drawings of stage sets of current plays. A two-act play entitled "Lure of the Log" was written and produced by the pupils, who also designed the costumes and sketched them in water color.

EVALUATION

Setting up minimum essentials in regard to skill in each area was considered by the group to be inconsistent with the philosophy and purposes of the unified arts program. It is more appropriate to seek answers to questions such as these:

1. Is the child permitted to perform at the level at which he is?
2. Does the learning situation challenge him to "stretch out"?
3. What kind of person was he at the beginning of Grade VII, and how has experience in the arts helped him to grow in the desired direction?
4. Are his relationships with others mutually satisfying and marked by interest, respect, affection, freedom, justice, co-operation, etc.?
5. Are the activities healthful, social, constructive, aesthetic, meaningful?

The purposes of evaluation in the unified arts program are to provide information basic to effective guidance of individual students and to appraise the program by determining to what extent the objectives of the program are actually being realized. Since the objectives are not yet well defined in terms of behavior, situations in which

the children could be expected to display the types of behavior indicated in the objectives are not easily identifiable.

Evaluation in the unified arts program has gone through many stages and still needs attention because of the effect on teaching and learning of the evaluation methods used. Growth of the children and of the program itself has been constantly studied. Included in the several aspects of this evaluation are self-evaluation by the pupils, joint teacher-pupil evaluation, teacher evaluation of the pupil, group evaluation, and opinions of the parents.

Early in the experiment it became apparent that the report forms which had been used in the separate subject areas were not appropriate in the unified arts program. Observation was the chief method used in attacking this problem, while other methods were being sought. The children have helped many times in re-wording and interpreting the items on report forms so that the items would have a more nearly common meaning for pupils, teachers, and parents. The parents have made helpful suggestions when consulted.

Some of the early forms used included desirable personality traits, with some space allotted to descriptions of accomplishment. The child was encouraged to write in statements about what he enjoyed most, his strongest points, his weakest points, etc. After many revisions, the sheet devised for 1942-43 had columns for

SAMPLE REPORT SHEET

INTEGRATED ARTS PROGRAM

(Experimental edition 11/12/43)

REPORT FOR Jones, John GRADE VIII DATE March 6-April 21
Last name First name

	Teacher's Ratings
1. Group adjustment: a) Consideration for others	Fair. Developing slowly. Not conscious that his remarks sometimes hurt other students' feelings.
b) Group decisions: (1) Helps make them	Usually. Could enter discussion more.
(2) Abides by them	Not always.
2. Use and care of property, equipment, and materials	Excellent, and also directs others in group.
3. Interest	Exceptional.
4. General attitude	Very good on the whole.
5. Initiative Able and willing to a) Start under own power	Increasingly independent; needed some help.
b) Continue under own power	Sticks to his work better than last year.
6. Skill—Co-ordination	Above average; developing nicely.
7. Originality	Noted.
8. Effort and use of time	A hard worker but sometimes gets distracted. Activities usually well planned.
9. Accomplishment a) Quantity	Good; has ability to do better.
b) Quality	Improved rapidly during the project.
c) Improvement	Satisfactory. Could show more social concern.

COMMENTS: John is showing much more perseverance in the face of difficulties than he did last year. He accepts responsibility readily on a group project but hasn't yet brought his voice under suitable control.

Name of Teacher

writing in descriptive words regarding the child's work in each area in which he had had experience, with space at the bottom of the page for additional comments by each teacher involved.

In 1943-44 the desired learning outcomes were given a more prominent place on the report than were the experiences themselves. Descriptive words were again used, as may be seen on the sample report sheet included here, and each teacher made a comment on each child after the child had finished work in that area. With only one area being reported on a page, reports became more detailed and more valuable. The rotation system made it possible and advisable to send reports home more often than once a semester, after the child had completed his work in one area or project. An attempt will be made in the next revision of the report sheet to provide for more adequate descriptions of both status and growth, although meanwhile the descriptive words and comments take care of these matters fairly well.

To facilitate the gathering of needed data, many practical examinations and performance tests have been attempted, and some are in regular use. Group judging has shown some good possibilities. In each area some specific interpretation is desirable—for instance, of the quality and the quantity of the learning in that area and of the use and the care of equipment—whereas consideration for others and the ability to carry on under one's own power might be common for all the activities. The teacher in one area

scored the children on their care in putting away their equipment. Other experiments have been with paper-and-pencil summaries prepared by the pupils to serve as advice to the next group and with reports describing various procedures. Some interesting results have been obtained when the child's description of himself was compared with the teacher's ratings placed on the same sheet. Joint pupil-teacher conferring is extremely fruitful, although it is time-consuming.

CONCLUDING STATEMENT

Much of value has been accomplished in the unified arts experiment, although many problems are still unsolved. One of the major limitations has been the wide separation of the classrooms, but plans now in process will provide facilities in one part of the building for the five arts areas and will make it possible for the members of the arts staff to function more closely together.

The staff is constantly searching for better ways of helping the children develop interests that will be pupil-initiated and continuing, so that the pupils will be increasingly able to use unscheduled or "free" time effectively. Ways are being formulated to describe the skills and attitudes necessary for the accomplishment of the purposes described earlier in this report, the reasonable expectations in terms of pupil growth toward maturity at a given grade level, and the contributions of the arts program to the accomplishment of all-school objectives.

AN ANALYSIS OF THE VERBAL ACCOMPANIMENT TO CLASSROOM SOUND FILMS

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★

THE study here reported was undertaken to obtain answers to the following questions: (1) Is the vocabulary burden of classroom sound motion pictures excessively heavy? (2) Are the sentences in the verbal accompaniments to films too long?

DIFFICULTY OF VOCABULARY

The word count.—To answer the first of these questions, a complete word count was made of the verbal accompaniments to the following eight Erpi sound films: "Growth of Cities," "Westward Movement," "Chile," "Brazil," "China," "Theory of Flight," "Problems of Flight," and "Sunfish." The list of words for each film was then compared with the list of words in Thorndike's *A Teacher's Word Book*¹ to determine the probable difficulty of the words and, in turn, the probable vocabulary burden of the film.

Since the words of the verbal accompaniments were to be compared with the Thorndike list, they were

tabulated as Thorndike had made his tabulations in compiling his original list of twenty thousand words. After the count for each film had been made, the Thorndike word-level number was added after each word to indicate its probable difficulty. The list for each of the films totaled from three hundred to five hundred words and had to be condensed in some manner to facilitate interpretation and understanding. This condensation was accomplished by determining the number of different words in each word level for each film and dividing the number of words in each word level by the total number of words used in the film. The percentage of different words in various word levels for the eight films is given in Table 1.

From this table it is evident that approximately half of the different words used in the films fall within the first 1,000 word level, the average percentage for the eight films being 53.0 per cent. The average percentage of the words in the 5,000 most commonly used words is 84.8, and an average of 15.6 per cent of the words are included in the word levels above the 5,000 word level. These data indicate that most of the words in the

¹ Edward L. Thorndike, *A Teacher's Word Book of the Twenty Thousand Words Found Most Frequently and Widely in General Reading for Children and Young People*. New York: Teachers College, Columbia University, 1931.

films are included in the Thorndike word list and that the vast majority of the words are in the word levels below the 6,000 level.

Comparison of findings with word counts of materials read by children:

Unfortunately, published studies of the vocabulary burdens of classroom sound motion pictures are not available. Therefore, in order to make intelligible comparisons, it was necessary to turn to the word counts of science and social-studies textbooks, comic books, and other materials read by children. No attempt was made to make an exhaustive comparison of findings with textbooks, since the elements of picture and verbal presentation are absent. The illustrations given below will suffice.

In 1938 Curtis made an extensive study of the vocabulary burden of science textbooks. In this publication he stated that the 7,000 word level is "the logical starting-point at which authors should begin to simplify the vocabularies of textbooks of science for high-school pupils."² This statement takes on considerable significance when the findings of Anderson and Fairbanks are considered. These men discovered that "the coefficient of .80 . . . between the reading and hearing vocabulary tests is unusually high. . . . It appears that vocabulary ability is a general function which, on the average, operates independent of the mode of presentation of ma-

terial."³ Young also found a correlation of .80 between reading and hearing vocabulary.⁴ These findings of Curtis, Anderson and Fairbanks, and Young suggest that high-school pupils viewing the films would find difficulty with the words above the 7,000 word level.

TABLE 1

PERCENTAGE OF DIFFERENT WORDS IN
VARIOUS WORD LEVELS FOR
EIGHT FILMS

Film	Percent- age of Words in First 1,000 Level	Percent- age of Words in First 1,000 through 5,000 Level	Percent- age of Words in 6,000 Level and Above
Growth of Cities..	44.8	79.8	19.9
Westward Move- ment.....	47.3	84.2	16.2
Chile.....	48.9	84.4	16.3
Brazil.....	54.5	85.8	14.3
China.....	55.1	86.3	13.8
Theory of Flight..	55.8	88.5	13.9
Problems of Flight	50.3	81.8	18.3
Sunfish.....	67.1	87.7	11.9
Average.....	53.0	84.8	15.6

A review of Masters' theses on the vocabulary burden of social-studies textbooks, filed at the University of Michigan, gives conclusions similar to those of Curtis. For example, Pow-

² Irving H. Anderson and Grant Fairbanks, "Common and Differential Factors in Reading Vocabulary and Hearing Vocabulary," *Journal of Educational Research*, XXX (January, 1937), 319.

⁴ William E. Young, "The Relation of Reading Comprehension and Retention to Hearing Comprehension and Retention," *Journal of Experimental Education*, V (September, 1936), 30-39.

³ Francis D. Curtis, *Investigations of Vocabulary in Textbooks of Science for Secondary Schools*, p. 57. Boston: Ginn & Co., 1938.

ers concludes, "The level at which the vocabulary difficulty is greatly increased for the eighth-grade students is the 7,000 level of Thorndike's word book of 20,000 words."⁵

A more recent and more closely related study is one made by Thorndike⁶ of comic books. It may be considered to be more closely related because it involves pictures and words presented together; however, the element of speech, present in sound films, is absent. Thorndike counted all the words in the comic books that were above the first 1,000 of the Thorndike list. The data that he presents in his study were changed, for the purpose of comparison with the data of this study, from the number of words in each level to the percentage of words in each level. When this was done, it was discovered that an average of 50 per cent of the different words used in the comic books, excluding the words falling in the first 1,000 level, are in or above the 6,000 word level, as compared with 32.6 per cent for the films. However, if the words outside the Thorndike list, mostly proper names, homemade slang, vulgar slang, etc., are excluded, approximately 31 per cent of the words in the comic books are in or above the 6,000 word level. These facts take on considerable

significance when Witty's study⁷ is considered. His investigation shows that the comic books which were studied by Thorndike are widely read by pupils from Grades IV, V, and VI. Therefore, if pupils are interested in comic books and if they read comic books which have a heavy vocabulary burden, it would seem that motion pictures accompanied by spoken words of less difficulty would be equally well understood. The pictures presented in the movies, like the pictures in the comic books, would have a tendency to help the pupil over the vocabulary difficulties. If the child did not know certain words, he could look at the picture and comprehend the idea being presented.

Finding the mean vocabulary level for each film.—In order to establish an index of vocabulary difficulty for each film, it was decided, after a study of various methods, to use for each film the mean vocabulary level obtained by averaging the levels of all the words used in the film. Thus the mean, the standard deviation, and the standard error for each film were determined. These are presented in Table 2.

When the mean vocabulary levels of the eight films are compared, it is found that the mean vocabulary level of the film "Sunfish" is significantly lower than the mean vocabulary

⁵ O. E. Powers, "A Study of the Vocabulary of a Textbook in United States History," p. 24. Unpublished Master's thesis, University of Michigan, 1938.

⁶ Robert L. Thorndike, "Words and the Comics," *Journal of Experimental Education*, X (December, 1941), 110-13.

⁷ Paul Witty, "Children's Interest in Reading the Comics," *Journal of Experimental Education*, X (December, 1941), 100-104. See also: Paul Witty, "Reading the Comics—A Comparative Study," *ibid.*, 105-9.

levels of the films "Growth of Cities," "Westward Movement," "Chile," "Brazil," and "Problems of Flight." The ranking of the films would indicate that "Growth of Cities" is the most difficult of the films and that "Sunfish" is the least difficult.

Grade placement of films.—A comparison of the mean vocabulary levels

"Sunfish," with the lowest mean level, is likewise recommended for the same grades. It will be noted that the director of visual education took a conservative stand on the three films for which the film producers had not published grade placements at the time of the investigation. All in all, while the wide grade placements may be

TABLE 2
MEAN VOCABULARY LEVEL AND RECOMMENDED GRADE
PLACEMENT OF EIGHT FILMS

FILM	MEAN LEVEL*	RANK BASED ON MEAN	STANDARD DEVIATION	STANDARD ERROR	GRADE RECOMMENDED FOR PLACEMENT	
					Erpi†	Evansville Public Schools‡
Growth of Cities.....	3.207	1	4.200	.194	IV-XII	IV-XII
Westward Movement....	3.000	3	4.200	.192	IV-XII	IV-XII
Chile.....	2.806	5	4.113	.135	IV-XII	Departmental and high school
Brazil.....	3.025	2	4.814	.229	IV-XII	IV-XII
China.....	2.571	6	4.188	.191	§	Departmental and high school
Theory of Flight.....	2.337	7	3.570	.205	§	VII-XII
Problems of Flight.....	2.985	4	4.348	.232	§	VII-XII
Sunfish.....	2.049	8	3.493	.179	IV-XII	IV-XII

* The index of difficulty based on the mean word level is read thus: "Growth of Cities," third thousand and two hundred and seventh word; or, "Sunfish," second thousand and forty-ninth word.

† Taken from "Utilization Scope of the Erpi Instructional Sound Film." New York: Erpi Classroom Films, Inc.

‡ Taken from "Visual Education Catalog," provided by Lowell Hopkins, director of visual education, Public Schools, Evansville, Indiana.

§ The grade placements of three films had not been published at the time this investigation was made.

of the films and the recommended grade placements of the films is made in Table 2.

The recommendations made by the producers of the films and the Evansville school system do not appear to take into account the vocabulary burden of the films. "Growth of Cities," the film with the highest mean vocabulary level, is recommended for Grades IV through XII. The film

justified, it is evident that differences in vocabulary difficulty were not given consideration.

LENGTH OF SENTENCES

Estimating sentence length.—Another means used to estimate the difficulty of the films was to obtain the average sentence length, a procedure which has also been used in gauging the reading difficulty of books. In or-

der to obtain the data on sentence length, the number of words in each film was divided by the number of sentences in the film. The answer which was secured represented the average sentence length. The findings are given in Table 3.

From this table it can be seen that the average number of sentences is 77 for each film and that the average number of words in each sentence is

of Flight" would probably rank as the most difficult. It will be noted that the ranks of the films on the two items do not closely correspond.

Comparing sentence length of films with that of other materials.—Comparisons were made between the average sentence length of the verbal accompaniments to the films and the average length of sentences in other materials.

TABLE 3
NUMBER OF WORDS, NUMBER OF SENTENCES, AND AVERAGE LENGTH OF SENTENCES IN EIGHT FILMS, AND RANKS OF FILMS ON BASIS OF SENTENCE LENGTH AND MEAN VOCABULARY LEVEL

FILM	NUMBER OF WORDS	NUMBER OF SENTENCES	SENTENCE LENGTH		RANK ON MEAN VOCABULARY LEVEL
			Average	Rank	
Growth of Cities.....	1,189	78	15.24	7	1
Westward Movement..	1,332	76	17.53	5	3
Chile.....	1,360	74	18.38	4	5
Brazil.....	1,309	77	17.00	6	2
China.....	1,383	75	18.44	3	6
Theory of Flight.....	1,236	65	19.02	2	7
Problems of Flight.....	1,262	62	20.35	1	4
Sunfish.....	1,087	112	9.71	8	8
Average.....	1,270	77	16.96	.....	.....

16.96. The film with the shortest sentences is "Sunfish," while the film "Problems of Flight" has the longest sentences.

Comparing the data on sentence length with the data concerning the vocabulary level of films, it is discovered that the film "Sunfish" has the lowest mean vocabulary level and the shortest sentences. This film would appear to be the easiest of the eight. The film "Chile" would seem to rank in the middle, and "Problems

The first comparison was made with the findings of Stormzand and O'Shea.⁸ These authors made a study of the length of sentences in "school materials," that is, materials read by children at various grade levels. The average length of the sentences used in each film is given in Table 4, and each film is assigned a grade placement according to the rating of

⁸ Martin J. Stormzand and M. V. O'Shea, *How Much English Grammar?* p. 19. Baltimore: Warwick & York, Inc., 1924.

Stormzand and O'Shea for materials with sentences of that average length.

The findings of Woody⁹ were used as the basis for the second comparison. Woody, in an attempt to discover the average length of the sentences used by pupils, made a careful study of compositions written by children from Grades IV through

TABLE 4

AVERAGE SENTENCE LENGTH OF EIGHT FILMS AND GRADE PLACEMENT OF FILMS ACCORDING TO FINDINGS OF STORMZAND AND O'SHEA CONCERNING LENGTH OF SENTENCES IN SCHOOL MATERIAL

Film	Average Sentence Length	Stormzand and O'Shea Rating
Growth of Cities..	15.24	Grade VIII
Westward Movement..	17.53	Grade X
Chile.....	18.38	Grade XI
Brazil.....	17.00	Grade IX
China.....	18.44	Grade XI
Theory of Flight...	19.02	Grade XII
Problems of Flight..	20.35	Grade XIII
Sunfish.....	9.71	Below Grade IV

VIII. The compositions were secured from children in selected schools in Michigan. A summary of Woody's findings is given in Table 5.

Comparing these averages with those for the films, one discovers that only one film, "Sunfish," has an average sentence length as short as the averages found by Woody. The other films have an average sentence length greater than the average length of sentences written by the children in Grades IV through VIII in Michigan.

⁹ Clifford Woody, Unpublished Study. University of Michigan, 1940.

A third investigation of average sentence length has been made by Gray and Leary,¹⁰ who were interested in determining tentative standards to be used by persons writing for adults of limited reading ability. The authors state that sentences of a "median" length of 14.8 words are "very easy," while those of 19.1 are "easy." When these averages are compared with the average sentence length of the films, one discovers that

TABLE 5

AVERAGE LENGTH OF SENTENCES IN COMPOSITIONS OF PUPILS IN MICHIGAN

Grade	Average Sentence Length
VIII.....	13.1
VII.....	11.9
VI.....	11.2
V.....	10.1
IV.....	9.4

only one of the films has an average sentence length above that which is considered to be "easy" reading material for adults of limited reading ability.

One other study should be mentioned. Greve¹¹ made a study of the average sentence length of a seventh-

¹⁰ William S. Gray and Bernice E. Leary, *What Makes A Book Readable, with Special Reference to Adults of Limited Reading Ability*, p. 288. Chicago: University of Chicago Press, 1935.

¹¹ Esther B. Greve, "Determination of the Sentence Structure Difficulty of *The New World's Foundations in the Old*, by West and West," p. 67. Unpublished Master's thesis, University of Michigan, 1938.

grade social-studies textbook and found that the average sentence length for the book was 19.7. When this figure is compared with the average sentence length of the films, it is discovered that the average sentence length of only one film, "Problems of Flight," exceeds the average length of the sentences of the textbook.

SUMMARY

This analysis of the verbal accompaniment to films from the standpoints of difficulty of vocabulary and sentence length has revealed the following facts.

The majority of the words in the verbal accompaniments to the eight

films studied are below the 6,000 word level of the Thorndike list. When compared with the vocabulary of comic books, the vocabulary burden of the films seems reasonably low. However, vocabulary does not seem to be taken into account when grade placements of films are made.

The average sentence length of the films appears to be long when compared with compositions written by children and with selected school materials. When compared with a social-studies textbook and with standards for adults of limited reading ability, however, the average length of the sentences does not appear to be too long.

THE PLACE OF GEOLOGY IN GENERAL EDUCATION

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THE science of geology has been defined as follows by Chamberlin and Salisbury, former heads of the Department of Geology at the University of Chicago:

Geology is essentially a history of the earth and its inhabitants. . . . It is one of the broadest of the sciences, and brings under consideration certain phases of other sciences, particularly astronomy, physics, chemistry, zoölogy, and botany.¹

So broad a field should have great value in general education, but unfortunately many students have thought of geology as a dry study of rocks and many educators have considered it a pre-professional subject for those students expecting to become geologists or to enter a related vocation. This unfortunate concept may have risen from the tendency on the part of some geology instructors to concern themselves with little else than the teaching of the facts necessary to the understanding of advanced courses. Geology is the youngest of the natural sciences, and, in a young country intent upon developing its mineral wealth, geology teachers have had to devote more attention to the training of proficient geologists than to the

instillation of the cultural aspects in the layman.

The value of geology in general education is so evident to the geology teacher, who fully understands and appreciates the subject, that he forgets to point out this value as he teaches the facts. He does not realize that the facts alone often fail to be meaningful to the student, who cannot see their relationship to his own life.

At a school which is attended by large numbers of students who will never become geologists but who will spend the major portion of their lives engaged in the duties of home and community or of another profession, the necessity for interpreting the value of geology in general education is paramount. The primary goal, therefore, is to select from geology, in the broadest sense of the term, materials which contribute to the life and the living of the student and to make these materials meaningful to him.

The first problem faced by the instructor in designing such a functional course is that of giving the student a reason for taking geology. This problem is solved when the student sees the value of geology to himself. A knowledge of geology can be applied

¹ Thomas C. Chamberlin and Rollin D. Salisbury, *A College Text-book of Geology*, p. 1. New York: Henry Holt & Co., 1909.

to a number of fields, both professional and nonprofessional, in which the student is vitally interested. In this paper illustrations are drawn of the application of geology to the field of aviation and of the application of geology to the field of home, family, and child care.

RELATING GEOLOGY TO AVIATION

As the aviation program of the school develops, geology students taking aviation discover that they can apply many of the fundamental principles of geology to flight vocations. Taking the cue from air-minded students, the instructor draws from the field of aviation illustrations of the use of geologic principles. The aviator must be well versed in the behavior of the atmosphere in order to plan a safe flight or to make the correct decision should he be caught in a perilous weather situation. As a navigator he must understand the relation of the rotation and the revolution of the earth to longitude, latitude, and time. In celestial navigation he must apply his knowledge of astronomy.

The studies of map projections, topographic maps, and aeronautical charts are directly applied to aviation. Questions about the materials which compose the earth and about the meaning of mountains, rivers, lakes, plains, and plateaus and other landscape features are attacked by the flight-minded students from the angle of the formation of the land surface underlying the air routes of the United States and the relation of the

land surface to flying and to flying weather.

To the student geology becomes vital and fascinating. To the instructor the awakening of the student to the broad and far-reaching scope of science and to his relationship to science is amazing. The pupil's interest in aviation serves as a card of admittance to the scientific field. With his intellectual curiosity stimulated, he seeks to discover how the earth originated, how it developed through the ages, and what is the story of life in its many forms. Gradually and firmly grows his concept of the significance of life-evolution and of the place of man, not only on the earth, but in the universe. The student accepts the opportunity to achieve a satisfactory philosophy of life.

As new interests develop, the knowledge of the atmosphere, the hydrosphere (water of the earth), and the lithosphere (rocks and minerals of the earth) is applied to daily living. The pupil learns that the atmosphere influences health, culture, and travel. He learns of the problems of supplying large quantities of drinking water to his home city or town and of the dangers of pollution of wells and springs at his country home, in recreation camps, and along the roadside. He considers the relation of running water to his agricultural community and to landscaping and gardening. His knowledge of rocks and minerals is applied to daily living in fields such as mineral resources prominent in the news and used in every home, for ex-

ample, petroleum, coal, and iron; mineral resources in relation to national and international politics and to common gems and jewelry; and earthquake and volcanic phenomena described in the news.

By taking advantage of a vocational interest in aviation, the course in geology serves not only to increase the proficiency of the pupil in that vocation but also to give him information, training, and an appreciation of the world about him, which will be of infinite value to him when he takes his place in the home and the community.

RELATING GEOLOGY TO THE HOME

Again using the definition which treats geology as the broadest of the sciences, a science drawing from both the physical and the biological divisions, the motivating interest which girls have in home, family, and child care can be utilized, and a course in general geology for homemakers can be constructed.

One method of making direct and specific application of geology to the field of child care is to consider the methods of presenting nature study to children. In addition to the four spheres of geology, namely, air, water, rocks, and life of the earth, consideration should be given to elementary astronomy. Class discussions may deal with the answering of children's questions in each of these spheres and with methods of maintaining and promoting the interests of children in the physical and the biological world

about them. Questions such as the following can be answered:

- What are stars?
- What makes the stars twinkle?
- What is the moon made of?
- What makes the sunshine warm?
- Where does the sun go when it goes down?
- What is inside the earth?
- What makes the wind blow?
- Where does the wind go when it stops blowing?
- What are clouds?
- Where do rivers go?
- What is on top of mountains?
- Where does water in the well come from?
- How can wood turn to stone?
- What makes the tides?
- Why does snow fall in flakes instead of drops?
- Why is frost on the windowpane lacy?
- What is a volcano?
- What makes the earth quake?

The discussion of fossils may be introduced by the study of living plants and animals. Following the study of the living forms, the fossil representatives may be found in rocks.

Project work may be directed in the field of nature handcraft (by the construction of models, games, charts, etc.) at the elementary level. The instructor can conduct field trips, not only to open the eyes of the students to rocks, flowers, trees, birds, animals, and stars, but to show the students how they can increase and encourage the child's natural interest in such things. A part of the course should be devoted to the analysis of nature books and stories from the standpoint of accuracy.

Through the interests in children which the students already have when

they enter the course, the instructor is able to make meaningful applications of general principles of geology in the field of child study. Two things are accomplished: (1) the student prepares for the specific job of mother or nursery-school teacher, and (2) she receives the key with which she is able to unlock the doors to a fuller understanding and appreciation of the geological phenomena which she encounters in daily living, to new interests, and to the opportunity of achieving a satisfactory philosophy of life.

MAKING GEOLOGY FUNCTIONAL FOR ALL STUDENTS

In a single class composed of many students with heterogeneous interests, it is impossible to build a course around the motivating interests of each student. The application in the field of aviation, while of intense interest to the prospective pilot, is definitely boring to the student who registered in geology expecting to learn about the oil structures of his father's oil leases in Texas.

At Stephens College, where the functional approach to the teaching of geology has been tried out, there has been a definite evolution of geology classes. The beginning course in general geology was divided into three interest groups: one for students who were entering because of initial interests in geology or because of the need for science credit to transfer to a university; the second for students who were entering because of initial interests in aviation; and the third

for students who were entering because of initial interests in child training. In each class geology is treated as a broad science, leaning heavily on astronomy, physics, chemistry, zoölogy, and botany. For example, the air-minded students repeatedly use the three laws of gases in the study of the atmosphere, and the elementary principles of astronomy and planetary action in the introduction to navigation. From their interests in the physical world the students are led into the exciting study of the effect of the physical world on plant and animal evolution, and they gain an insight into how they themselves came to be as they are. In similar fashion the young women who are looking forward to enriching the lives of children, in learning how to teach nature study, will open for themselves a vast reservoir of interests heretofore untapped and will attain a deep understanding and an appreciation of the aspects of astronomy, physics, chemistry, zoölogy, and botany which have a direct bearing on their lives. Geology, which is essentially a history of the earth and of its inhabitants, not only integrates the world of science, but functionalizes science for the student. Additional interest groups can be designed, as geology is applied to fields other than those of aviation and homemaking. By making the study of geology vital to the student, the teacher can more quickly and effectively teach the fundamental principles and concepts of the subject.

SELECTED REFERENCES ON GUIDANCE

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THE need for guidance—especially vocational guidance—promises to become more acute as the crisis of war passes and the crisis of reconversion envelops us. The greatest demand for guidance service will undoubtedly be for employment counseling, which will be rendered largely by such agencies as the United States Employment Service. The burden, however, will also fall heavily on educational institutions—secondary, collegiate, and special adult—for the reasons that many returning veterans will be seeking education for civilian careers and that many workers in war industries will need re-education for peacetime pursuits. The references included in this bibliography are those which seemed to the writer to contribute especially to the efficient discharge of the guidance function by teachers, counselors, and administrators in educational institutions.

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Finds that "a properly weighted combination of scores on the Iowa Legal Aptitude Test and total pre-law grade-point averages appears to constitute the best quantitative index of success in first-year law at the University of Iowa."
451. BENNETT, GEORGE K., and FEAR, RICHARD A. "Mechanical Comprehension and Dexterity," *Personnel Journal*, XXII (May, 1943), 12-17.
Cites an experiment proving the value of the Bennett Mechanical Comprehension Test for selecting machine-tool operators.
452. BERDIE, RALPH F. "Factors Related to Vocational Interests," *Psychological Bulletin*, XLI (March, 1944), 137-57.
* A summary of critical thinking and of scientific studies.
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Reports a scientific study made to determine the extent to which counselors agree in their judgments of the soundness of students' vocational choices.
454. *Comparative Occupation Statistics for the United States, 1870 to 1940*. Sixteenth Census of the United States, 1940. Washington: Government Printing Office, 1943. Pp. xii + 206.
Prepared by Alba M. Edwards, this volume is a portrayal of occupational trends and will be helpful to the counselor.

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tories," *Occupations*, XXII (May, 1944), 484-87.

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461. NORRIS, RUTH. "Personality Ratings of High-School Pupils in Relation to Their Success in School," *School Review*, LII (January, 1944), 33-40.

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462. *Occupations Related to Occupations in Aluminum Production*. War Manpower Commission, Job Family Series, No. I-50. Washington: Government Printing Office, 1943. Pp. 52.

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465. "Ten Years of Occupational Research," *Occupations*, XXII (April, 1944), 387-446.

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472. *Controlling Juvenile Delinquency*. Children's Bureau Publication 301. Washington: Government Printing Office, 1943. Pp. iv+28.

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¹ See also Item 352 (*Juvenile Delinquency and the Schools in Wartime*) in the list of selected references appearing in the April, 1944, number of the *School Review*, Item 393 (Fenton) in the May, 1944, number of the same journal, and Item 188 (Hayes) in the May, 1944, number of the *Elementary School Journal*.

tection of groups of children especially vulnerable to delinquency," the "control of harmful influences in the community," and the "services for the delinquent child and the child with behavior problems."

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The nature and the prevention of mental disease are treated in the first nine chapters of this book, and the promotion of mental health is taken up in the remaining seven chapters. The book is characterized by the author's own integration of the field rather than by extensive reporting of the literature. Chapter xv, "Mammon versus Morale," is a penetrating interpretation of the impact of the economic order on personality.

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² See also Item 527 (Brown) in the list of selected references appearing in the December, 1943, number of the *School Review*.

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An exposition of a theory of evaluation and a description of techniques of evaluation.
500. SMITH, CHARLES M. "The History of Vocational and Educational Guidance in New York City Schools," *High Points in the Work of the High Schools of New York City*, XXVI (March, 1944), 5-15.
Based largely on the official records of the Board of Education, this article traces the development of guidance service in New York City from the establishment of a "students' aid committee" in 1906 for the purpose of giving educational and vocational counsel to curb early school-leaving.
501. "Youth's Share in the Manpower Pool—A Symposium," *Occupations*, XXII (November, 1943), 83-95.
Descriptions of the activities of the guidance and placement departments in Pasadena, Oakland, Chicago, and in York, Pennsylvania, in the establishment of programs for relieving the wartime labor shortage by the use of school youth as part-time workers. Participants in the symposium were George D. Stoddard, A. M. Turrell, Marion Brown, Lester J. Schloerb, and Edward A. Glatfelter.

Educational Writings

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REVIEWS AND BOOK NOTES

SELECTED PRINCIPLES AND EVALUATED PRACTICES IN EXTRA-CURRICULUM ACTIVITIES.—An examination of the *Education Index* reveals that hundreds of articles dealing with extra-curriculum activities have been published in recent years. An analysis of the titles further reveals that practically all the published articles merely express opinionated statements on the subject or describe isolated aspects of the extra-curriculum program of an individual school. A recent contribution¹ that deals with the problem scientifically and on a scope broad enough to be significant is, therefore, most welcome.

This Doctor's dissertation was prompted by a desire of the North Central Association of Colleges and Secondary Schools to evaluate practices of the management of extra-curriculum activities in representative school systems of the association. The three main steps of the investigation were (1) to determine effective principles of management, (2) to ascertain the various practices of the schools studied, and (3) to evaluate the practices on the basis of the principles of management.

An interesting portion of the study is that which deals with the selection of principles of management. These principles were derived from literature concerned with extra-curriculum activities. Some may question the validity of principles gleaned merely from the opinionated writings of various authors. In defense of the procedure, however, it should be stated that the writers consulted

were considered the most authoritative in the field.

Twenty-seven principles are listed and briefly discussed with respect to their selection. A study of all the principles would be well worth while. Only the first six, however, will be included in this review—merely to indicate the type of principles set forth.

1. Procedures for the inauguration of new activities should be characterized by definiteness in responsibility, ease of operation, and sensitivity to student wishes [p. 19].

2. Participants should be asked at the end of the season or year for recommendations relative to continuation of each activity [p. 20].

3. The aims of the different activities should be clearly defined so that evaluations may be made in relation to the accomplishment of these aims [p. 20].

4. Activity meetings should be held on school premises, during the school day, during an activities period when possible; night interscholastic contests should be held only on nights followed by school vacations [p. 21].

5. The programs of activities should be characterized by active participation on the part of the membership and by service to the school and community [p. 22].

6. The responsibility for the management of the extra-curriculum program in the school rests with the principal; in most cases this responsibility should be delegated to a director of extra-curriculum activities [p. 23].

The investigator classifies the principles of extra-curriculum management under the following chapter headings: "Characteristics of the Program in Operation," "Administration and Supervision of Activities," "Extra-curriculum Finance," "Student Participation in Activities," "Faculty Sponsors of Activities," "Values Derived from Participation in Activities," "Undesirable Outcomes from Participation in Activities," "Inter-

¹ J. Lloyd Trump, *High-School Extracurriculum Activities: Their Management in Public High Schools of the North Central Association*. Chicago: University of Chicago Press, 1944. Pp. x+210. \$2.00.

scholastic Contests," and "Evaluation by Local Schools."

Status of practice in the actual application of the principles of extra-curriculum management is determined from responses to questionnaires submitted to a large sampling of schools of the North Central Association and from personal observation in five selected schools. The data from the questionnaires are tabulated according to "small," "medium," and "large" school systems, thereby making it possible to determine what the practices of extra-curriculum activities are in schools of the size with which one may be concerned.

Each chapter is concluded with an evaluation of extra-curriculum practices. The evaluations are based on the responses derived from the questionnaires and are in conformity with the principles of management which the author has established.

Some school administrators are interested in the "curricularization of the extra-curriculum." They believe that all activities of the school which are justifiable and worth while should be incorporated into the curriculum with a proper place in the schedule. In reading a voluminous report on the subject of extra-curriculum activities, one might expect to find some mention of a trend in that direction, but apparently that problem was beyond the scope of Trump's study. Perhaps it is important enough, however, to warrant some special consideration.

School administrators, and particularly high-school principals, will derive considerable benefit from this thorough study. The list of principles of management and the tabulated data showing status of practices should serve as useful guides to anyone who is responsible for the development or supervision of an extra-curriculum program. Although the investigation was conducted within the confines of the North Central Association, its findings are equally applicable to other areas.

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CHANGES IN TRAITS AND ATTITUDES.—

Progressive educators have been interested for a number of years in the possibility of education toward the development of desirable personality patterns. In order to consider such a possibility, certain questions must be answered objectively. For example, do personality patterns change with a changing environment? Which traits are more modifiable and which are less? Are there any interrelations between various traits and attitudes? In this study¹ ambitious attempts are made to answer these questions and many more.

The case histories of twenty-five women who had at one time attended college were analyzed. The histories were made available through the Advisory Service at the Merrill-Palmer School. Check lists of terms descriptive of personality were set up, and on these were recorded references to excerpted case-history material for each of the twenty-five cases. The individuals under study were asked to rate themselves on trait and attitude lists, which furnished further data for comparison and analysis. Persistence and change of personality traits and of attitudes were measured through three periods—pre-college, college, and post-college levels.

The authors found that "in every one of the twenty-five women some nucleus of traits persisted throughout life" (p. 33). The persisting traits were more frequent than the fluctuating ones. The implication is that personality traits once developed in an individual will rarely change or disappear. The conclusion as to persistence of attitudes, although not quantitatively stated, was that most attitudes were lost or changed with the passage of time. "Many attitudes are lost along the way, and others are added as de-

¹ Katherine Elliott Roberts and Virginia Van Dyne Fleming, *Persistence and Change in Personality Patterns*. Monographs of the Society for Research in Child Development, Vol. VIII, No. 3 (Serial No. 36). Washington: Society for Research in Child Development, National Research Council, 1943. Pp. viii+206. \$1.50.

velopment proceeds and experiences increase" (p. 36).

The next step in the analysis was the selection of five women who came from happy childhood homes and five who came from unhappy childhood homes. The criteria used in the selection were specific types of excerpts from the case history entered on the check list. It was found that those women who had happy childhood homes were better adjusted socially, had a better understanding of their parents, and were more able to use insight into their own problems than were those who had unhappy childhood homes. On the other hand, those from the unhappy homes were better able to accept criticism and had fewer religious conflicts. Those women who were happily married showed on the whole a more wholesome personality pattern than those who were unhappily married. The dominant women, as determined by a Bernreuter score, were "adept socially, stable emotionally, and alert mentally" (p. 180), more so than were the submissive women. Women with high religious scores, as measured on the Vernon-Allport Study of Values, were also found to be more adequate socially than were those with low scores.

In the second part of the monograph numerical results and a detailed analysis of the data are given. These add very little to the first part of the monograph. Since the number of cases are few, in some instances only five, these data seem worth while as indication of trends rather than of quantitative differences. Some sixty-five pages of appendixes are presented. In one appendix are listed 229 traits. The meaning of many of these is not clear; for example, such general terms as "adaptable," "co-operative," "discriminating," "flippant," "resigned," "variable," and many others are listed without adequate operational definitions. The same criticism is true of the 523 attitudes, which are not clearly differentiated from the traits. One general criticism to be made is that the authors have attempted a short cut between a longitudinal and a cross-sectional study. The

value of such a study may be questioned because the data obtained from an interviewee concerning past history will be influenced by the present emotional state.

The monograph is of value in showing how an old though laborious technique, namely, case-history analysis, can be applied to the problem of personality study. It may prove of some value in establishing the validity of personality schedules and inventories, if we assume that the interview produces only valid material.

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MATHEMATICS FOR INDUSTRY AND THE ARMED FORCES.—The mathematical deficiencies of the adult population and of the students in our schools have caused much concern during the past several years. The war has brought a heavy demand for technicians and military personnel who understand mathematics and who are able to apply it.

A new book¹ attempts to provide the average adult, as well as the student in the upper years of the high school, with the mathematical skills which are most necessary in the industrial world and in military activities. This book has not been designed to fit into the regular high-school curriculum but to present the most important portions of arithmetic, algebra, plane and solid geometry, and trigonometry. About three-fourths of the problems and exercises are concerned with situations arising in modern warfare. Many new military and naval terms have been introduced; the mil as a unit of angular measure is discussed; military time notation is taught; and the greater part of the book is oriented toward the application of mathematics to usage in wartime.

The first six chapters of this book, comprising about 30 per cent of the entire work,

¹ Edwin Brown Allen, Dis Maly, and S. Herbert Starkey, Jr., *Vital Mathematics*. New York: Macmillan Co., 1944. Pp. viii + 456 + xxii. \$1.80.

explain the fundamentals of arithmetic. Reading and writing numbers, applying the fundamental operations to integers and common and decimal fractions, and solving problems in percentage form the greater part of this section. Denominate numbers, ratio and proportion, and elementary statistics are also taught.

Following the work in arithmetic, simple intuitive geometry is introduced. This includes discussion of points, lines, angles, planes, and several types of geometric figures. Algebra is then taken up; the formula is used as a tool for finding areas and perimeters of figures, and the concept of signed numbers is introduced. The remainder of the book includes additional topics in algebra, plane and solid geometry, plane and spherical trigonometry, logarithms, and the use of the slide rule. All these topics are used to support one another and to effect an integration whereby new skills and abilities are developed.

Each chapter begins with a set of questions and problems which indicate the kind of work to be presented in that chapter. Answers are provided for about half of the problems in the text. The appendixes contain a summary of important formulas used in algebra and geometry; tables of trigonometric ratios and of mantissas; and tables giving metric equivalents of English units of length, area, volume, and weight. Extensive practice is given throughout the book in converting English units into metric units and vice versa.

Since so much mathematics is presented in a single textbook, the treatment of topics other than arithmetic is highly condensed and concentrated. Often many definitions are given in a short section, and some of the rules, explanations, and discussions constitute difficult reading. While considerable space is devoted to arithmetic, relatively little detail is given to the more difficult parts of algebra and geometry. For example, only five exercises are given in finding the product of the sum and the difference of two quantities. There are only ten exercises pro-

viding practice in squaring a binomial, that important process being mentioned incidentally in a three-line footnote on page 186; later, this brief acquaintance is recalled and used in the development of a new algebraic process on page 259.

Several parts of the textbook reveal a lack of rigor. For example, the statement appears:

The sum of the interior angles of a polygon is equal in degrees to $n - 2$ straight angles or $(n - 2) 180^\circ$ [p. 284].

What the letter n represents is not specified. In the discussion of logarithms one finds the statement:

Every number N can be expressed as 10^r (when r is an integer, a rational fraction, or an irrational number) and, what is very important here, the values of r have been computed and tabulated [p. 373].

The authors fail to point out that the number N in such cases must not be a negative number or zero, although, in the second sentence following the one quoted, they use the assumption that N is any positive number. A slight typographical error on page 374 is followed by a serious one on page 380. Students might be disturbed by the reference to the straight-line graph of the function $c - 3 + i$ as a "curve" in Example 2 on page 205.

On account of the concentrated nature of the material in branches other than arithmetic, this book would be of advantage principally to superior students in the upper years of the high school and to ambitious persons who wish to learn the technical uses of mathematics in a short time. It might also be used by advanced classes in mathematics to review and to integrate the various branches of the subject, and it should be valuable as a means of providing mathematical training for personnel in the Army and the Navy.

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BEGINNING THE STUDY OF BUSINESS.—

Anyone interested in elementary business courses in general or anyone contemplating the selection of a textbook for a first course in business training will find it worth while to look over a book¹ that has recently come off the press. This book offers a fairly complete survey of business fundamentals, without dwelling on the theories of economic living or plunging into the technical aspects of law, insurance, banking procedure, and accounting. As the basic book for a high-school course, it is suitable for both vocational and nonvocational students. It will give some pupils their first and only contact with a subject that deals explicitly with practical problems which they will have to consider after their school days have ended.

The book is arranged in four parts. Part I gives a brief explanation of the scope of business, its functions, activities, and organization. The well-chosen illustrations and the use of boldface type at the beginning of each new topic give the reader a clear picture of what is to be covered.

Part II is divided into chapters dealing with organized agencies of business—communication, transportation, budgeting, money and credit, insurance, and public service. The chapters on communication and transportation are detailed, but the subjects do not suffer because of the length of the treatment. The section on insurance has been cut to the essentials, which seems desirable because of the technical nature of the subject. The discussions of special-agency services and of government and public utilities are among the better features of the book. They are given much greater attention and are approached from an angle that should provoke constructive class participation.

Another commendable feature of this section is the plan of suggesting courses that the student can take later to gain more com-

plete information. Such references should stimulate interest and help guide the student's interest in further education.

Part III traces the activities of business, from management and organization, down through the problems of production and selling, to the work of the bookkeeper, the secretary, and the other workers who have a part to play before a product gets to the consumer. A chapter is devoted to consumer problems and another to the factors of production; some of the reasoning in these units may be lost on the immature pupil, but the primary idea should be clear to the majority.

Part IV, which is very brief, discusses the human relations in business and work opportunities. Training, aptitudes, and education of prospective employees are investigated; methods of applying for positions, qualifications of employees, and company policies are considered. The authors obviously do not feel that the study of business from the standpoint of getting a job is the best approach. Their motive is to give a better understanding of how business operates and how one can best utilize its services; less stress is placed on how to enter business as an earner.

At the end of each chapter appropriate questions, vocabulary drills, arithmetic drills, and research problems are given. The research problems and questions seem particularly well chosen. They actually require the pupils to consult sources other than the textbook and provide for the various interests of the students. Each chapter concludes with a statement that leads into a natural consideration of the next subject. One characteristic of the book is the tendency to introduce a subject in its complex form and then to narrow it down to the pupil's personal situation. The section on "Management" appears to suffer from this treatment; the discussion begins on the level of management problems in big business and shifts abruptly to the presentation of a personal budget. Fortunately the contrast is not so great in other instances.

¹ Louis A. Rice, James H. Dodd, and Augustin L. Cosgrove, *First Principles of Business*. Boston: D. C. Heath & Co., 1944. Pp. x+598. \$2.00.

The book is well written and generally well organized. It reflects the authors' awareness of certain needs and problems arising in a first course in business. It should be examined by teachers of business subjects and by planners of curriculums.

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A SOURCE BOOK ON MAP-READING.—Map-reading is really a branch of physics, but it is a field which has been largely untouched by high-school physics teachers, probably because it has always been considered too technical for high-school pupils. It is a fact, however, that we are living in a technical age. The war and the air age which will follow the war make a knowledge of map-reading a necessity for lay people. A book¹ has been recently published which will give high-school pupils the background which they need to understand maps.

The book begins with a short history of cartography. The author then explains, and gives the deficiency of, each type of map, such as Mercator's projection, the stereographic projection, the azimuthal equidistant polar projection, the gnomonic projection, the Lambert conformal conic projection, the polyconic projection, the inter-

rupted homolographic projection, the orthographic projection, and other cylindrical and conical projections. The scale of maps and the representative fractions are explained in detail. Topographic features, compass rose, directions, bearing, azimuth, contour lines, profiles, and defiladed areas are also discussed. How to make a profile map is clearly explained on page 109.

At the time of our entry into World War II only a part of the United States had been aerially photographed. Today reconnaissance flights are mapping a large part of the world. For this reason it will be essential that everyone be able to read aerial photographs after the war. A concise but thorough explanation of the reading and the understanding of aerial photographs is given in this book. Stereograms and anaglyphs are discussed; they are important in the interpretation of aerial photographs because they give an impression of depth or relief.

This book is well written and illustrated, and it presents the technical subject of map-reading so clearly that it can easily be understood by the average high-school student. The book could serve as the textbook for a pre-induction course in map-reading for high-school students or as a supplement to a course in aviation.

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¹ Samuel L. Greitzer, *Elementary Topography and Map Reading*. New York: McGraw-Hill Book Co., Inc., 1944. Pp. viii+158. \$1.60.

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